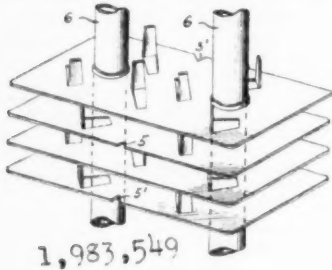


PATENTS

Issued Dec. 11, 1934

1,983,549. RADIATOR FIN. Hermann J. Krackowizer, Chicago, Ill., assignor to Refrigeration Appliances, Inc., Chicago, Ill. Application May 10, 1933. Serial No. 670,338. 2 Claims. (Cl. 257-262.)

1. A radiator element including a plurality of tubes and plates extending around at least two tubes, each plate having



1,983,549

punched out lugs and the lugs being unsymmetrically arranged on either half of a plate whereby when said plate is turned 180° and fitted to its adjacent plate, the punched out lugs will each rest against and be covered by the solid part of its adjacent plate, said lugs being narrower at their outer ends than at the ends where the lugs join the plate.

1,983,550. REFRIGERATING APPARATUS. Ralph L. Lee, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a corporation of Delaware. Application Nov. 24, 1930. Serial No. 497,715. Renewed Nov. 1, 1933. 20 Claims. (Cl. 62-115.)

5. A refrigerating apparatus comprising an object to be cooled, a constantly running motor, a compressor, a condenser and an evaporator, and means controlled by temperature conditions in said apparatus for unloading and reloading the compressor whereby to maintain a uniform temperature.

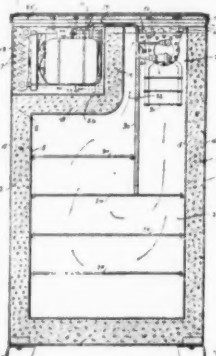
1,983,620. AIR HEATING AND CONDITIONING SYSTEM. Jesse Noble Llewellyn, Indianapolis, Ind. Application June 23, 1932. Serial No. 618,862. 5 Claims. (Cl. 183-9.)

4. In apparatus of the character described, the combination of an air supply passage, an absorbent rotary tubular filter therein, a trough in said passage forming a part thereof, said filter being nested in the trough and completely closing the passage above the trough and extending entirely across the same for compelling air passage into, through and out of said filter, bucket means within the filter and positioned near the periphery thereof to discharge trough liquid to the absorbent portion of the filter above the liquid in the trough, and in the filter rotation, means for supplying liquid to the trough, float valve means for controlling the same, other and larger valve means for quickly discharging the trough contents, the discharge being at a greater rate than the supply thereto whereby upon substantial emptying of the trough the float valve controlled supply flushes the trough until said other valve means is closed.

1,983,652. REFRIGERATOR. Eugene L. Barnes, Buffalo, N. Y. Application Jan. 21, 1931. Serial No. 510,137. 14 Claims. (Cl. 62-116.)

1. A refrigerator comprising a cabinet formed in its upper portion with an air conditioning compartment and an apparatus compartment, a cover for closing

the upper ends of these compartments, a cooling unit suspended from the cover and disposed within the air conditioning compartment, and a motor, compressor



1,983,652

and condenser suspended from the cover and disposed within the apparatus compartment.

1,983,653. ELECTRIC ACTUATING MECHANISM FOR ICE-CREAM FREEZERS. Bernhart A. Benson, Chicago, Ill., assignor to Chicago Electric Mfg. Co., Chicago, Ill., a corporation of Illinois. Application Sept. 8, 1933. Serial No. 688,639. 10 Claims. (Cl. 259-53.)

1. A device for actuating an appliance having a rotatable appliance-shaft, comprising: a generally flat and horizontal supporting member; means fast on the supporting member and adapted to interlock against rotation with a stationary part of the appliance; a driven gear journaled in the supporting member and slidably engageable with the said appliance-shaft; a platform extending parallel to the supporting member; a motor including a stator core fastened to the platform and including a rotor having its shaft extending through the platform; a driving pinion fast on the rotor shaft between the platform and the supporting member; spacer means rigidly spacing upwardly the platform from the supporting member; a speed-reducing gear train disposed between the platform and the supporting member and operatively connecting the driving pinion with the said driven gear; and an inverted box-like gear cover fastened to the supporting member and spaced downwardly from the said platform and having the lower edges of its box sides seated on the supporting member, whereby the gear casing stiffens the supporting member against being flexed downwardly by the weight of the said motor and gear train.

1,983,711. RADIATOR TYPE AIR CONDITIONING APPARATUS. Horace L. Smith, Jr., and Lucian N. Jones, Richmond, Va., assignors to Thermal Engineering Corp., Richmond, Va., a corporation of Virginia. Application Oct. 21, 1933. Serial No. 694,560. 8 Claims. (Cl. 257-138.)

4. In a device of the type described, a housing having vertically spaced air openings therein, and a heat exchange device disposed in said housing in the path of air travel through said housing between said openings, said heat exchange device comprising at least one longitudinally extending fluid carrying duct, a plurality of vertical fins on said duct, said fins having straight lower edges disposed at an angle to the horizontal and terminating at downwardly disposed points substantially aligned longitudinally of the device and a moisture collecting trough disposed beneath said points of all of said fins.

1,983,753. HUMIDIFYING SYSTEM. Carl Hagen, Park Ridge, Ill. Application March 1, 1930. Serial No. 432,428. 4 Claims. (Cl. 237-1.)

1. In combination, a distributing device

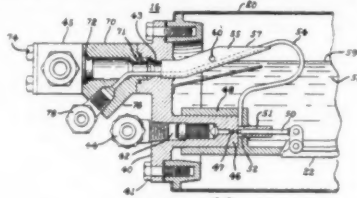
for emitting steam into heated air currents, a flash steam generator-superheater having a water supply pipe, a pipe leading to the distributing device and a water sealed trap in the pipe leading to the distributing device, said trap having steam inlet and outlet ports, a water outlet port, a water sealed baffle-plate interposed between the steam ports and water outlet port and a valve interposed between the steam inlet and outlet ports.

1,983,754. REFRIGERATING METHOD AND MACHINE. Bicknell Hall, Gloucester, Mass., assignor to Frosted Foods Co., Inc., Dover, Del., a corporation of Delaware. Application May 20, 1931. Serial No. 538,649. 31 Claims. (Cl. 62-114.)

1. The method of freezing food products, which consists in moving a measured volume of the same as a unit across a refrigerating surface and in contact therewith.

1,983,766. REFRIGERATING APPARATUS. David E. Maccabee, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a corporation of Delaware. Application March 30, 1929. Serial No. 351,361. Renewed Jan. 17, 1934. 13 Claims. (Cl. 62-115.)

1. Refrigerating apparatus comprising in combination an evaporator including one or more horizontal passages providing



1,983,766

refrigerant evaporating surfaces, a second evaporator below the level of the first mentioned evaporator and including a gas and liquid separating chamber and evaporating surfaces in open communication therewith, means responsive to the level of liquid in the second evaporator for supplying volatile liquid refrigerant to the first evaporator, the evaporating surfaces of the second evaporator being below the liquid level therein, the first evaporator being adapted to evaporate a portion only of such liquid, and means for draining liquid and conducting gaseous refrigerant to the second evaporator.

1,983,768. ART OF REFRIGERATION. Karl B. Norton, Manchester, Mass., assignor to Frosted Foods Co., Inc., Dover, Del., a corporation of Delaware. Application Nov. 5, 1931. Serial No. 573,163. 12 Claims. (Cl. 62-104.)

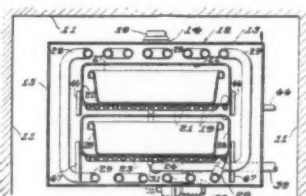
8. Apparatus for freezing food products, comprising portable heat-conductive plates adapted to hold the products therebetween, and a collapsible and water-tight covering for the plates, the covered product-holding plates being adapted to be submerged with the interposed food products in a liquid refrigerant.

1,983,895. REFRIGERATING APPARATUS. Edward C. Berkdoll, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a corporation of Delaware. Application Oct. 31, 1930. Serial No. 492,500. Renewed March 22, 1933. 15 Claims. (Cl. 62-116.)

1. A refrigerator comprising a cabinet having an insulated refrigerated compartment, a machine compartment located above said refrigerated compartment, an insulated partition dividing said two compartments, said partition being continuously inclined downwardly from the front to the back of the cabinet and forming the entire top wall of said refrigerated compartment.

1,983,990. EVAPORATOR FOR REFRIGERATORS. Lawrence A. Philipp, Detroit, Mich., assignor to Kelvinator Corp., Detroit, Mich., a corporation of Michigan. Application April 11, 1929. Serial No. 354,319. Renewed May 4, 1934. 12 Claims. (Cl. 62-8.)

1. A refrigerant evaporating conduit having a relatively high evaporation capacity disposed in thermal contact with

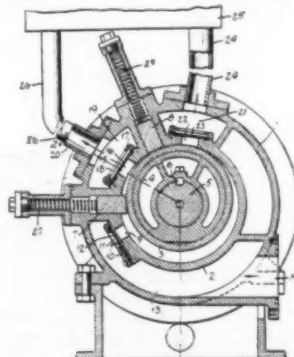


1,983,990

a heat exchanger, a brine solution associated with the heat exchanger, said brine solution being confined to prevent its circulation away from the expansion conduit after becoming heated, and means for controlling the flow of refrigerant through said conduit in response to changes in temperature of said brine.

1,983,997. MULTISTAGE ROTARY COMPRESSOR. Walter G. E. Roloff, Kirkwood, Mo. Application Nov. 17, 1930. Serial No. 496,283. 1 Claim. (Cl. 230-147.)

A rotary, multi-stage compressor, comprising a cylinder, a rotor of smaller diameter than the cylinder and eccen-



1,983,997

trically mounted therein for rolling movement over the wall of the cylinder, said cylinder having low pressure suction and discharge ports, a high pressure suction

port communicating with the low pressure discharge port, and a high pressure discharge port, and a plurality of blades yieldingly mounted in the wall of the cylinder and cooperating with the surface of said rotor and positioned in the cylinder to separate the low pressure suction and discharge ports from the high pressure suction and discharge ports.

1,984,030. MEANS FOR SERVING COCKTAILS AND THE LIKE. John B. Nixon, Butler, Pa. Application Sept. 22, 1932. Serial No. 634,348. 6 Claims. (Cl. 62-142.)

1. In means for serving cocktails and the like, the combination with a container, of a separable preformed block of ice or solid refrigerant having a surface shaped in conformity with a portion of the outer surface of the container adapted to entirely support the container, and a receptacle for the container and block, said receptacle having a block supporting member upon which the block is positioned while in contact with and supporting the container.

1,984,053. AUTOMATICALLY-CONTROLLED REFRIGERATIVE SYSTEM. Thomas W. Carraway, Chicago, Ill., assignor to General Fire Extinguisher Co., Providence, R. I., a corporation of Delaware. Application July 7, 1930. Serial No. 465,908. 8 Claims. (Cl. 62-2.)

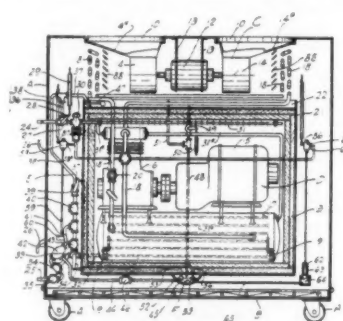
1. A refrigerative system comprising, in combination, a heat exchange unit in a refrigerant circuit; means in said circuit for controlling the flow of refrigerant; means for driving a current of air past said unit; means for directing the air to said driving means; and means in the path of said directed air on the approach side of said driving means actuated in accordance with variations in the velocity of said air for controlling the said first named means.

1,984,054. REGULATOR FOR REFRIGERATIVE SYSTEMS. Thomas W. Carraway, Chicago, Ill., assignor to General Fire Extinguisher Co., Providence, R. I., a corporation of Delaware. Application Sept. 8, 1930. Serial No. 480,594. 9 Claims. (Cl. 62-3.)

1. A refrigerative system comprising a heat-absorbing element in a refrigerant circuit; means in said circuit for controlling the flow of refrigerant; means on one side of said element for moving air therethrough; and means on the opposite side of said element in the path of the air flow and actuated in accordance with the variations in velocity thereof for controlling the first named means.

1,984,135. AIR CONDITIONING APPARATUS. Albert J. R. Houston, Omaha, Nebr. Application Sept. 13, 1933. Serial No. 689,332. 14 Claims. (Cl. 257-9.)

1. In air conditioning apparatus of the character set forth, a casing provided at its bottom with an inlet opening, a re-

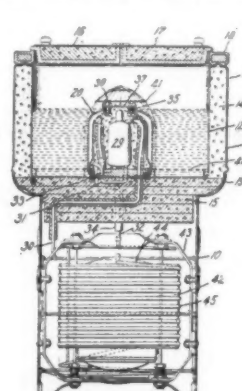


1,984,135

movable filter over said opening, an insulation casing supported above said filter, a reservoir supported by said insulation casing, refrigerating apparatus within said insulation casing, cooling coils connected with said apparatus and supported above said reservoir, said casing being provided at its top with an outlet opening above said cooling coils, means for passing air through said casing and out of said discharge opening, means for conducting a cooling fluid to the refrigerating apparatus, and means for discharging together the water collecting in said reservoir and said cooling water.

1,984,149. BEVERAGE COOLING APPARATUS. Delbert F. Newman, Schenectady, N. Y., assignor to General Electric Co., a corporation of New York. Application Nov. 5, 1932. Serial No. 641,391. 3 Claims. (Cl. 62-143.)

1. A cooling apparatus for bottled beverages and the like including a supporting frame, a thermally insulated tank sup-



1,984,149

ported on said frame, a refrigerant evaporator arranged within said tank, means including a float valve within and insulated from said evaporator for controlling the flow of refrigerant to said evaporator, and means supported within said frame for supplying liquid refrigerant to said float valve and for withdrawing gaseous refrigerant from said evaporator.

1,984,249. PRODUCTION OF SOLID CARBON DIOXIDE. Joseph R. Chamberlain, York, Pa., assignor to York Ice Machinery Corp., York, Pa., a corporation of Delaware. Application Dec. 16, 1930. Serial No. 502,803. 13 Claims. (Cl. 62-121.)

1. In combination, a main closed refrigeration circuit in which carbon dioxide is

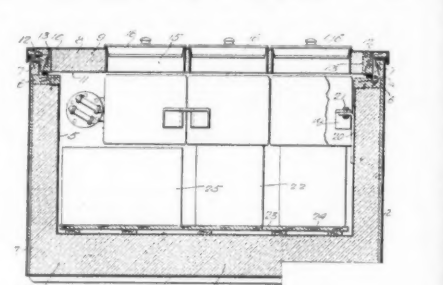
circulated and to which additional carbon dioxide is supplied; a second closed refrigeration circuit in which a refrigerant is expanded to extract heat from liquid carbon dioxide in the main circuit; a third closed refrigeration circuit in which a refrigerant is expanded to liquefy compressed gases in said second circuit; and means for expanding liquefied carbon dioxide in the main circuit to form carbon dioxide snow.

1,984,250. PRODUCTION OF SOLID CARBON DIOXIDE. Joseph R. Chamberlain, York, Pa., assignor to York Ice Machinery Corp., York, Pa., a corporation of Delaware. Application March 14, 1932. Serial No. 598,829. 6 Claims. (Cl. 62-121.)

1. A system for solidifying carbon dioxide, comprising in combination, compressing means; a condenser fed thereby; a receiver; means interposed between the condenser and the receiver for protecting the receiver from the pressure existing in the condenser and for assuring the admission of liquefied carbon dioxide alone from the condenser to the receiver; means for maintaining said receiver at a substantially uniform pressure intermediate between condenser pressure and the suction pressure of said compressing means; a solidifying expander interposed in a connection between the liquid space in said receiver and the suction of said compressing means; and means for supplying carbon dioxide to the system.

1,984,289. REFRIGERATING SYSTEM. Harry L. Semans, Pittsburgh, Pa., and Gilbert T. Heddaeus, Wilmington, Del., assignors to Refrigerating Equipment Co., Wilmington, Del., a corporation of Delaware. Application Oct. 7, 1930. Serial No. 487,054. Renewed May 10, 1934. 15 Claims. (Cl. 62-126.)

4. In a refrigerating device for ice cream cabinets or the like, an evaporator unit comprising a plurality of ad-



1,984,289

acent pairs of concentric members having their edges together to form a plurality of refrigerant chambers, the outer members of said pairs having openings, the edges of the openings of adjacent outer members being joined together, whereby said chambers are made communicating for the circulation of the refrigerant.

1,984,321. REGULATOR FOR REFRIGERATIVE SYSTEMS. Louis Schwitzer, Indianapolis, Ind., assignor, by mesne assignments, to General Fire Extinguisher Co., Providence, R. I., a corporation of Delaware. Application Jan. 26, 1931. Serial No. 511,118. 10 Claims. (Cl. 62-2.)

1. A refrigerative system comprising a heat exchanger having connection with a supply of refrigerant; means in said connection for controlling the flow of refrigerant through the exchanger; means for moving air past the exchanger; and a displaceable member for actuating said control means in accordance with the air flow past said exchanger; and a housing extending from said exchanger and adapted to protect the displaceable member while permitting operative movements thereof.

1,984,341. DIRECT READING RELATIVE HUMIDITY INDICATOR. John J. Grebe and Leonard C. Chamberlain, Midland, Mich., assignors to The Dow Chemical Co., Midland, Mich., a corporation of Michigan. Application Dec. 5, 1931. Serial No. 579,196. 7 Claims. (Cl. 73-24.)

3. In apparatus for indicating relative humidity the combination of; a dry bulb comprising a closed chamber and a gas therein; a wet bulb comprising a second closed chamber, a gas therein and means to wet the outer surface of said second closed chamber; a passageway, of which at least a part is transparent, connecting said wet and dry bulbs; a compensatory quantity of liquid interposed between the gases in said wet and dry bulbs, of which liquid at least a portion occupies a part of said passageway, and adapted to movement in said passageway such that the meniscus of the liquid portion therein is visible in the transparent part thereof; and a scale in terms of relative humidity positioned adjacent to the visible part of said passageway whereby relative humidity can be read directly therefrom according to the position of the said liquid meniscus in relation to the markings thereon.

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How To Service Orphan Refrigerators

For the information of service men, detailed authentic instructions for servicing various makes of "orphan" refrigerators—published in recent issues of Electric Refrigeration News—are now available. Eleven popular makes are covered in this series. A limited number of extra copies of all 21 back issues containing these articles are available. A package made up of the 21 copies of the News (as listed below) will be mailed postpaid on receipt of \$2.00.

Absopure Commercial

Drawings and service data on both Series E and F Absopure compressors, also of the Absopure float, header assembly, oil gauge, discharge and intake valves, and expansion valve. (July 18, 25, & Aug. 1, 1934.)

Allison Household

Detailed service instructions, with views of the two-stage compressor, float valve, flooded evaporator, check valve, etc. of this early household machine using ethyl chloride. Analysis of service calls. (May 30 & June 6, 1934.)

Belding-Hall Electric

Operating cycle of the high-side float system using sulphur dioxide and the unique Electric gear pump compressor. Drawings of service manifold, cast-iron cooling unit, thermostat, and electrical wiring. (Aug. 22 & 29, 1934.)

Holmes Household

Complete description of the ethyl chloride system built by Holmes Products, Inc. Illustrations of the compressor, float valve, charging valve in three positions, check valve, circuit breaker, and cooling unit, and service helps. (Oct. 10, 17 & 24, 1934.)

Iceberg Household

Service helps on Iceberg self-contained household refrigerators and

water coolers, both of which used a reciprocating compressor and methyl chloride. (Aug. 8, 1934.)

Majestic Standard

Operating cycle, section of compressor, suction and discharge valves, float valve assembly, control assemblies, thermostat, and method of installing evaporator illustrated in a series of three lengthy articles on Grigsby-Grunow's conventional "open" type refrigerator. (Sept. 12, 19 & 26, 1934.)

Majestic Hermetic

Detailed description of all the principal parts of Grigsby-Grunow's hermetically sealed units and instructions for all service operations which may be conducted in the field. (Aug. 16, 1933.)

Rice Household

Data on the Rice household machines in which methyl chloride was the refrigerant. Discussion of common service troubles encountered with the capillary tube. (July 4, 1934.)

U.S. Hermetic

Service discussion of the direct-driven, sulphur dioxide hermetic machine built by the U. S. Radio & Television Corp. Phantom view of the refrigerating unit and electrical wiring diagram. (Aug. 15, 1934.)

Wayne Household

Description of all major parts in the Wayne household machine, and instructions for performing all common service operations. Illustrations of the complete system, double-sealed valve assembly, section of the compressor, and expansion valve. (July 11, 1934.)

Welsbach Household

Complete treatise on the Welsbach ethyl chloride household machine, with illustrations of compressor, expansion valve, receiver valve, condenser shut-off valve, compressor inlet valve, thermostat, and two types of Welsbach controls. (June 13, 20 & 27, 1934.)

Electric Refrigeration News, 5229 Cass Ave., Detroit, Mich.

REFRIGERATION NEWS

Registered U. S. Patent Office

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DETROIT, MICHIGAN, JANUARY 2, 1935

Entered as second-class
matter Aug. 1, 1927THREE DOLLARS PER YEAR
TEN CENTS PER COPY

INDUSTRY SELLS 1,400,000 UNITS DURING 1934

Crosley Alters Plant to Make 2,000 Per Day

Refrigeration Production Capacity Doubled by Factory Changes

CINCINNATI—Crosley Radio Corp. has completed changes and additions in its production division for electric refrigerators that will allow for a production of 2,000 refrigerators a day, practically doubling its previous capacity, it was announced last week by Powell Crosley, Jr., president.

Approximately 40,000 square feet of floor space have been added to the refrigerator division, increasing the factory floor space to 600,000 square feet, with two miles of conveyors in the continuous production line.

Capacity of the refrigerator cabinet division has been increased to 1,000 cabinets a day.

Cost of the plant alterations, including new equipment, was about \$300,000, Mr. Crosley stated.

Distributors Convention Opens Jan. 4

CINCINNATI—Crosley Radio Corp. will enter its 1935 merchandising year Friday (Jan. 4) when 100 Crosley distributors will convene in studio A of radio station WLW here to view the new line of Crosley Shelvador electric refrigerators and Crosley radios.

Sales and advertising plans for the year will be outlined at the convention.

Among those who will address the meetings are: Powell Crosley, Jr., president; John P. Rogers, assistant general manager; Howard E. Richardson, assistant to the president in charge of sales; Neil Bauer, field sales manager; Lee Bird, traveling service representative; Glenn H. Corbett, advertising manager; and James W. Beckman, director of public relations.

Liberty Will Make Macy's 'Brand Line'

NEW YORK CITY—Liberty Refrigeration Corp. will manufacture the electric refrigerator that will carry the "Macy" brand name in 1935 and which will be sold by the R. H. Macy Co., it was announced recently by L. Sheeran, superintendent of the Liberty Refrigeration Corp.

Two Banks to Install Air Conditioning

WASHINGTON, D. C.—According to reports garnered by the Federal Housing Administration on the progress of the Better Housing Program, two banks are planning immediate installation of air-conditioning equipment.

A Tulsa, Okla., bank has announced that it intends to spend \$50,000 on an air-conditioning system.

Another bank (city not named) expects to spend between \$225,000 and \$250,000 in installing an air-conditioning system for its 26-story office building.

John Kirby Joins Staff of Big Machinery Group

WASHINGTON, D. C.—John Kirby, formerly with the Machinery and Allied Products Institute, has joined the staff of the Refrigerating Machinery Association with headquarters in this city.

He will also aid in the administration of the Refrigerating Machinery Industry Code as assistant to William B. Henderson, secretary-treasurer of the Code Authority.

Previously Mr. Kirby was special assistant to Dr. Wilson Compton, former chief of the NRA's trade association division and later assistant to Wharton Clay, Dr. Compton's successor.

Frigidaire Branches In N.Y., Baltimore Quit Retailing

Executives of Frigidaire Corp.'s sales branches in New York City and Baltimore last week announced completion of arrangements whereby, effective Jan. 1, the branches will retire from actual retailing of household refrigerators in favor of independent dealers. The branches will remain in operation as wholesalers and general supervisory agencies, however, the executives announced.

Of the seven retail stores which the branch has operated in New York City, the headquarters retail salesroom at 39 W. 45th St. will be retained under branch supervision as a display and demonstration shop for the use of all Frigidaire dealers in the metropolitan territory.

The Jamaica Frigidaire store has been purchased by the Brooklyn department store of Abraham & Straus. The store in Livingston St., Brooklyn, has been taken over by the John Wanamaker department store.

The four remaining Frigidaire retail showrooms have been purchased by their respective managers, who will go into the retail business for themselves.

According to Keith L. Saunders, manager of the wholesale division in New York City, a number of additional dealer appointments in the metropolitan area will be announced in the near future.

In Baltimore the department store of Hochschild, Kohn & Co. at Howard & Lexington Sts. will take over the Frigidaire retail store at 535 N. Howard St. This store will be continued as the Frigidaire electric refrigerator branch of Hochschild, Kohn & Co. The entire sales personnel of 18 men will be retained and M. F. Tucker, manager, will continue in the same capacity.

I. P. Hall, manager and buyer for the refrigeration department of Hochschild, Kohn & Co., will have supervision of all refrigeration activities of the department store, including the exclusive Frigidaire branch.

E. B. Dorsee, who for the past several years has been Baltimore district manager for Frigidaire Sales Corp., becomes zone manager of Frigidaire operations under the new setup.

Air Conditioning Carey Co., Inc., a recently organized corporation, will assume Frigidaire air-conditioning sales and service, and also Frigidaire household service and installation. Offices will be established in the Candler building.

This new concern is headed by G. Cheston Carey, president; Andrew G. Carey, vice president; Osma K. Gardner, treasurer; and A. Morris Carey, Jr., vice president and general manager.

Yardley Smith, refrigerator and air-conditioning engineer and a graduate

(Concluded on Page 2, Column 3)

Kelvinator 1935 Line Has 'Super Deluxe' Models

New Convenience Features Added; Unit and Styling Remain Unchanged

By Phil B. Redeker

DETROIT — A number of refinements, rather than any radical change, marks the 1935 line of household electric refrigerators which Kelvinator Corp. is announcing this week.

New interior or "convenience" features have been added, and smaller models incorporate features heretofore reserved for higher-priced models. Exterior cabinet design remains unchanged and no change of any consequence has been made in the refrigerating system.

Kelvinator has placed further emphasis on the higher-priced, quality product in its 1935 line with the inclusion of a "super deluxe" series.

Prime new feature to be included in the super deluxe series is a sliding "food wheel." This food wheel is comprised of five covered crystal food dishes on a revolving tray, and slides out from the interior on tracks, enabling the user to whirl it about with a maximum of ease and convenience.

This food wheel is included on the three largest cabinets in the super deluxe series.

Another new feature this year is the sliding fruit basket. This feature is included in the three larger models of the deluxe series and in all the models of the super deluxe series.

Eighteen models are included in four groups, the "K," "P," "D," and "SD" series. The five "K" cabinets are lacquer finished, and range in capacity from 4.25 to 7.60 cu. ft. Principal

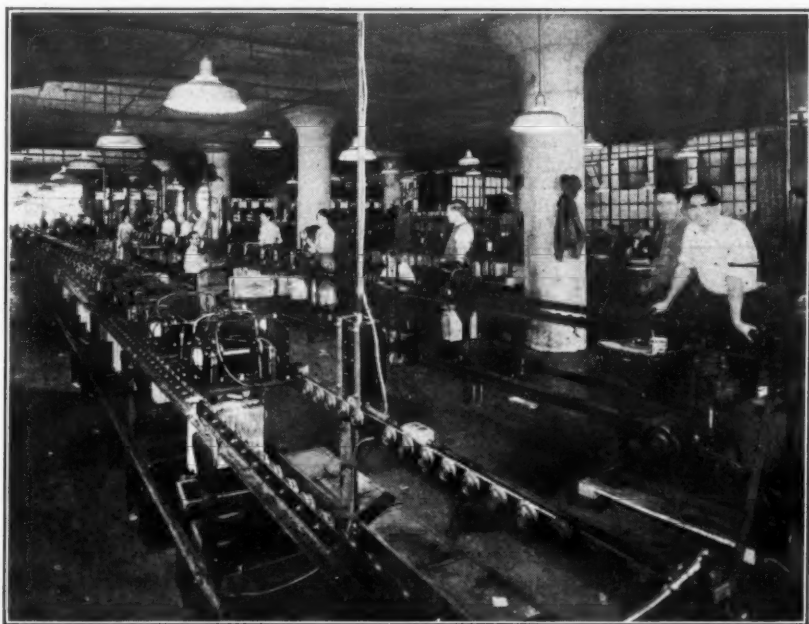
(Concluded on Page 2, Column 4)

Wurlitzer Plant to Make Furniture

CINCINNATI—R. C. Roling, vice president and general manager, the Rudolph Wurlitzer Co., has just announced conclusion of negotiations with the Sun Glow Industries of Mansfield, Ohio, whereby the latter company will use a large portion of the facilities of Wurlitzer's modern wood-working plant at North Tonnawanda, N. Y., for the manufacture of a complete line of furniture.

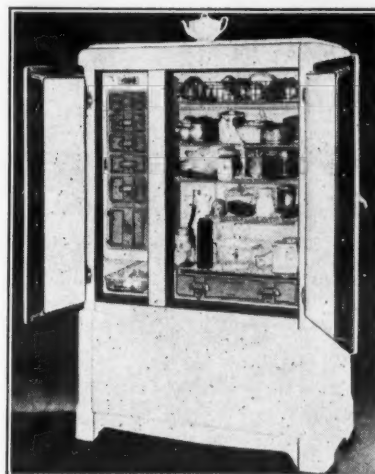
Wurlitzer will immediately start the manufacture of a complete line of bedroom and occasional furniture in this plant for use Sun Glow Industries, samples of which are to be shown at the January Furniture Markets in New York and Chicago. This merchandise will be marketed through the Sun Glow selling organization.

Ready to Make 2,000 a Day



Scene on the production line in the Crosley refrigerator plant, which has been enlarged and equipped with two miles of conveyor lines, to make possible a production of 2,000 units a day.

Super Deluxe



One of the models in Kelvinator's super deluxe series. New features include a revolving "food wheel," sliding fruit basket, and a new Kelvinator food filing system.

D'Olive Promoted as Ditzell Is Named S-W Sales Head

CHICAGO, Jan. 1 — Announcement is made by Stewart-Warner Corp. that effective today Charles D'Olive, who has been directing refrigeration engineering and sales, is promoted to the position of assistant to vice president and general manager Frank A. Hiter. John Ditzell, formerly vice president and director of sales for the Grigsby-Grunow Co., will have charge of radio and refrigeration sales.

In his new position Mr. D'Olive will continue his supervision of engineering and product planning, and will have numerous duties in connection with sales in various divisions of the corporation.

The appointment of Mr. Ditzell is a further step in the company's plan to consolidate the sales organizations on radio and refrigeration which have hitherto been two separate divisions under the separate direction. Not long ago, the field force was reorganized to eliminate duplication of effort and travel.

Mr. Ditzell, in addition to his previous connection with Grigsby-Grunow, has also been a Chicago distributor for Electrolux refrigerators, head of the phonograph and piano department of Famous-Barr department store in St. Louis, head of the contract department of the Brunswick phonograph record organization, and sales director of the Kansas City area for the Victor Talking Machine Co.

Cincinnati Distributor For F-M Line Named

CINCINNATI — Appliances, Inc., a new company recently formed in this city, has been appointed distributor for the Fairbanks-Morse Home Appliances, Inc. The line handled includes the Conservador electric refrigerator, home and auto radio, washing machines, and ironers.

W. H. Burkhardt is president of the new company and Guy Flaig is sales manager.

Horstman and Murdock Promoted by Merriam

SCHENECTADY, N. Y. — Promotion of Harold Horstman and Roy Murdock to new positions in the organization of A. Wayne Merriam, Inc., General Electric distributor for this territory, was announced recently.

Mr. Horstman assumes the position of supervisor of major household electrical appliances—refrigerators, ranges and dishwashers—for both Merriam dealers and branch retail sales organizations. He will direct installations of these appliances, and will be in charge of training the service crews and educating the salesmen in terms of good service.

Mr. Murdock has been appointed commercial engineer, and will devote all his time to engineering and supervising commercial installations and service.

Boom in Spring Months Made Record Possible

November and December Sales Improve after Early Fall Slump

By A. J. Cutting

DETROIT—Manufacturers of household electric refrigerators sold approximately 1,400,000 units to distributors and dealers throughout the world during 1934 to set a new all-time high record, according to a tentative estimate just made by ELECTRIC REFRIGERATION NEWS after a close scrutiny of refrigeration industry activities during the past year.

After struggling vainly for several years to sell a million units in a year, the industry finally found its stride to reach the million goal in 1933, and the early months of 1934 found executives of leading manufacturing companies predicting that 1934 would be an even more satisfactory year. How well these predictions have been fulfilled is indicated by the fact that the 1934 figure was nearly 30 per cent greater than the 1,080,000 units estimated by the News for the year 1933.

An unprecedented wave of consumer buying in the early months of 1934 caused a heavy demand upon

(Concluded on Page 13, Column 3)

Total Sales by Years

Annual sales of household refrigerators by all U. S. manufacturers since 1920.

Year	No. of Units	Average Price	Retail Value
To 1920	10,000	\$600	\$ 6,000,000
1921	5,000	550	2,750,000
1922	12,000	525	6,300,000
1923	18,000	475	8,550,000
1924	30,000	450	13,500,000
1925	75,000	425	31,875,000
1926	210,000	330	69,300,000
1927	390,000	350	136,500,000
1928	560,000	334	187,040,000
1929	840,000	292	245,280,000
1930	850,000	275	233,750,000
1931	965,000	258	248,970,000
1932	840,000	195	163,800,000
1933	1,080,000	170	183,600,000
1934	1,400,000	172	240,800,000
Total	7,285,000		\$1,790,615,000

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An unprecedented wave of consumer buying in the early months of 1934 caused a heavy demand upon

(Concluded on Page 13, Column 3)

C. I. T. Reduces Rates On Carrying Charges

JACKSON, Mich.—Announced C. I. T. Corp. rate reductions on carrying charges for household electric refrigerators amount to more than \$5 in the price ranges that are more frequently sold on the 24 months' basis, according to a report included in a bulletin recently issued by the Sparks-Withington Co., manufacturer of Sparton refrigerators and radios.

Peirce-Phelps Becomes Grunow Distributor

PHILADELPHIA — The General Household Utilities Co. has announced the appointment of Peirce-Phelps Inc., Philadelphia wholesale house, as distributor for Grunow radios and refrigerators.

This appointment, effective Jan. 1, 1935, renews a former direct relationship between William C. Grunow and his associates and Peirce-Phelps. The wholesale house was formerly distributor of Majestic A & B eliminators, and later distributor in the Philadelphia territory of the Majestic radio.

Ilg Names 3 Western Representatives

CHICAGO — Ilg Electric Ventilating Co. has just appointed three district representatives for its air-conditioning and refrigeration products in the states of Iowa, Nebraska, and Oklahoma, as follows:

N. J. Bigham, Y. M. C. A. Building, Des Moines, Ia.; Geo. C. Mittauer, 4966 Hamilton Ave., Omaha, Nebr.; P. E. Ebersole, 214 S. Victor, Tulsa, Okla.

The Food File Assumes a New Form



In Kelvinator's super deluxe series the food file is in the form of a single drawer with three compartments.

31 'Liftops' Installed in Philadelphia Apartment

PHILADELPHIA — Thirty-one G-E "liftop" refrigerators were recently installed in the Waymore Apartments here, the sale being made by H. C. Blinsinger, apartment house manager for Judson C. Burns, Philadelphia distributor.

Salesman Howard Steel of the Burns organization recently installed six "liftops" in a Philadelphia apartment building located at 304 South 23rd St. and will install eight more soon.

VIRGINIA SMELTING Company
WEST NORFOLK, VIRGINIA
76 BEAVER ST., N.Y. - 131 STATE ST. BOSTON

Extra Dry
ESOTOOL
LIQUID SULPHUR DIOXIDE
V-METH-L
METHYL CHLORIDE

Eleven New Dealers Are Announced By Crosley

CINCINNATI—Eleven new Crosley dealers have been appointed recently by various Crosley distributors throughout the country. They are as follows:

The Tiley Radio Co., Murray, Ky.; Berve Implement Co., Radcliffe, Iowa; North Side Radio Shop, Rockville, Ind.; Gookin Furniture Co., Lowell, Mass.; Almy, Bigelow & Washburn, Inc., department store, Salem, Mass.; Blair F. Uber, Indiana, Pa.; Burdines Department Store and the Red Cross Drug Department Store, both of Miami; and the R. C. Lyons Store, Ruston, La.

Model Home in Detroit To Have Electrolux Unit

DETROIT — The Builders' Show Home, a model home to be on display in this city for 10 weeks, beginning March 1, 1935, will have an Electrolux as part of its model equipment, according to Roger Karcher, retail sales supervisor for the Detroit City Gas Co. of this city.



EXAMINE THE RECORD

The New Year, now beginning, brings a challenge to aggressive intelligent men to investigate the year-round business of Commercial Refrigeration, especially in connection with Copeland distributing franchises. To such men we offer full information concerning its profit-making possibilities.

Wherever Copeland Condensing Units are installed, there will be found satisfied customers . . . year-in and year-out these sturdy units have delivered their rated capacity economically, efficiently, dependably.

Today, as for years past, Copeland design provides every needed feature to make Commercial Refrigeration thoroughly reliable at all seasons of the year.

Write, wire, or phone today for complete details of our exclusive territorial set-up.

COPELAND REFRIGERATION CORP., Detroit, Mich.
Main Office and Factory—Holden at Lincoln Ave.
Division of DALLAS E. WINSLOW, Inc.

Copeland
DEPENDABLE ELECTRIC REFRIGERATION

G-E Will Entertain 'Toppers' in Miami Starting January 21

CLEVELAND — Four hundred top-notch salesmen of General Electric refrigerators, ranges and dishwashers, members of the "Toppers' Club," will arrive in Miami, Fla., the latter part of January for an expense-paid holiday as a reward for their sales achievements during 1934.

Special Pullman cars will run out of Chicago, Cleveland, New York, and Washington, D. C. at Jacksonville, Fla., these special cars will be hooked on to the "Toppers' Special," a special train which will take the star salesmen to Miami. The special will arrive at the southern winter resort on Jan. 21.

Names of the Toppers will be announced within a few days, when final reports of the year's sales have been compiled.

No set, formal program has been arranged for the Toppers' vacation. There will be golf, swimming, dog races, horse races, flights in dirigibles, horse-back riding, surf board riding, deep sea fishing, and excursions to other places of interest. Toppers will "write their own tickets" as to how they will spend their vacations. The special train will start back on the afternoon of Jan. 24. All expenses will be paid, including railroad fares, hotels, meals, and entertainment.

A banquet will be staged one evening, when P. B. Zimmerman, manager of General Electric's specialty appliance sales department, will present pins to Toppers in recognition of their sales efforts.

In addition to Manager Zimmerman, other officials of the department will accompany the Toppers. These will include A. M. Sweeney, manager of the sales division; A. L. Scaife, manager of the retail division; M. Grow, and H. A. Pritchard of the retail division.

Also accompanying the Toppers will be about 72 members of the Toppers' Advisory Staff. The staff is composed of outstanding department heads of distributor organizations — managers of retail, apartment house, wholesale, central station sales and sales promotion managers.

Membership in the Toppers' Club is won each year by the best G-E salesmen. Each is required to sell a certain amount of appliances, based on dollar volume.

Frigidaire Branch Setup in N. Y., Baltimore Altered

(Concluded from Page 1, Column 2) of Johns Hopkins university, will have charge of the air-conditioning and refrigerating engineering activities for Air Conditioning Carey Co., Inc. Mr. Smith was formerly with Silica Gel and more recently with the air-conditioning division of the local Frigidaire branch.

Frank Schuman, formerly of the local Frigidaire branch, will be sales manager on air-conditioning systems. F. A. Davis & Sons, Inc., local distributor for Liquid Carbonic Corp. soda fountain equipment and various makes of hotel supplies, will take over Frigidaire commercial refrigeration sales in the Baltimore area on an exclusive basis.

The entire sales personnel of the commercial refrigeration division of the Frigidaire sales branch will be taken over by the Davis organization.

E. Asbury Davis, who heads the Davis concern, is also president of United States Fidelity & Guaranty Co.

G-E Completely Equips Two New Fresno Homes

FRESNO, Calif.—The \$50,000 suburban home of Dr. F. L. R. Burks and the new Spanish type home of E. L. Todd now being constructed in this city will both have General Electric kitchens and air-conditioning systems.

Dr. Burks' home has installations both in the home itself and in the chauffeur's cottage on the same premises. The home is equipped with refrigerator, range and oil furnace, with year-round air conditioning. The chauffeur's cottage is equipped with a range and a 50-gallon water heater.

Lower-Priced Model



Kelvinator's "K" and "P" models are of this design. Wire basket "food file" (in the bottom) is furnished as accessory equipment.

New Features Added To Kelvinator Line

(Concluded from Page 1, Column 3) features of this low-priced line are the centered cooling unit, automatic light, sealed freezing chamber, ice tray lifter, five-purpose control, paneled doors, fine-mesh shelf, finger-tip latch with concealed catch, and refrigerated shelf.

Three models comprise the "P" group, the cabinet capacities of which are 5.41, 6.50 and 7.60 cu. ft. Features of this line are identical with those of comparably-sized "K" models, with the exception that the cabinet exteriors are porcelain. All 1935 Kelvinator models above the K-425 have been beautified by door paneling.

The "D" line, which has four models and compares with the company's highest-quality line of last year. Sizes run from 5.13 to 8.73 cu. ft.

'Food Wheel'



Closeup view of the five covered dishes comprising the food wheel. Hook in front is used to pull the wheel out of the cabinet.

There are six models in the super deluxe series, each model having a food file, crisper and thrift compartment. Sizes in this series of models range from 6.58 to 23.32 cu. ft.

Kelvinator has altered its "food filing" feature somewhat this year. The deluxe series models retain the feature as it was originally incorporated last year—with three individual compartments or drawers.

As available in the "K" and "P" series (as accessory, not as standard equipment), the food file is a wire basket without a metal front.

In the super deluxe models, the food file is in the form of one drawer with three separate compartments, the compartments being constructed of wire.

The "K" and "P" series also have on a new type design, in horizontal lines, on the chromium door to the freezer compartments.

The control is the same as was used last year, and is identical on all but the smallest model in the "K" series, which does not have the automatic reset from defrosting.

In most models the crispers are fitted with attractive flat bakelite covers that may be used as serving trays.

Traveling Caravans Planned as Aid to Promotion of FHA

WASHINGTON, D. C.—Home equipment manufacturers have evolved a plan to sponsor a group of auto caravans to tie in with the FHA program. Administration officials approved the plan as outlined at a conference held here recently and promised every support feasible for the Administration to lend to the plan.

Prime mover in the scheme was A. A. Uhalt, manager of the dealers' division of refrigeration department of the General Electric Co.

According to announced plans four large caravans of from 12 to 20 coaches will tour the country and capitalize the FHA program at the point of sale by leading home owners through the coaches, showing them all of the types of home equipment on which they can borrow money under the government's guarantee plan, and closing the deal in the banking coach in which there will be a personal representative of the FHA as well as local bankers.

The present plan is to despatch the first caravan some time in February to cover the smaller cities and towns in the South, arriving in Washington about April 1. From experiences derived from this initial effort three more caravans will be sent, one for the East, one for the Middle West, and another for the Pacific Coast.

Each coach will contain merchandise of one or more manufacturers of home modernization equipment or interior furnishings.

Manufacturers who have shown active interest in the plan are Westinghouse Electric & Mfg. Co.; American Radiator and Standard Sanitary Corp.; Armstrong Cork Co.; Johns-Manville Corp.; the Weyerhaeuser Lumber Co.; Alexander Smith & Sons Carpet Co.; the Crane Co., and the Sherwin Williams Co.

Swope Announces Competition for Home Design

NEW YORK CITY — Cooperating with the Federal Housing Administration and to stimulate interest in small home building, Gerard Swope, president of the General Electric Co., today announced that his company will sponsor a national competition beginning January 1, 1935, among architects for designs of small homes that will provide the utmost in modern convenience and livability.

A total of 54 prizes, aggregating \$21,000, will be offered to architects and designers. It will be possible for one architect to win awards amounting to \$5,000.

"This competition will enable the public to get a new vision of what an inexpensive home can be like in this new era of our national development," Mr. Swope said. "Science has made great strides in home electrification even through the depression."

"There is no longer any need for the homemaker to tire herself out with household labor. Most of it can be done more simply, efficiently, and less expensively by electrical servants. Washing, ironing, sweeping, cooking, and washing the dishes, can be done electrically at little cost. The troublesome heating problem has been solved, and air conditioning has arrived to make the home healthier, cleaner, more comfortable."

Roosevelt Says Utilities Will Reduce Rates

WASHINGTON, D. C.—President Roosevelt last week predicted that privately owned utilities will cooperate with the government to obtain rate reductions.

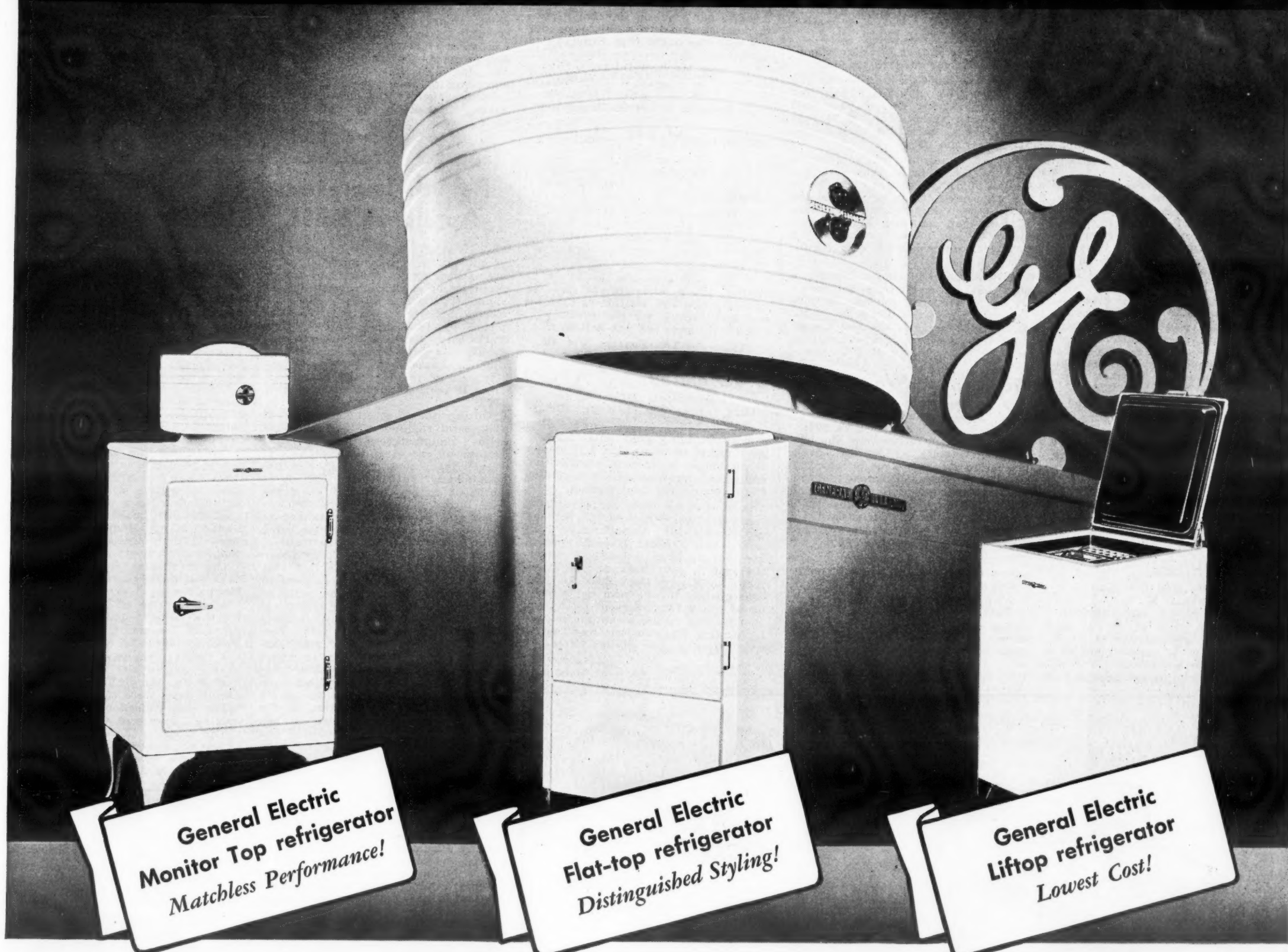
The President declared that officials of the power companies had expressed to him a willingness to shrink their capitalization by taking out any "water" found in stocks and to adjust rates downward to a point that would bring a reasonable net earning on what was found to be a fair capitalization.

Key Specifications of Kelvinator's 1935 Models

Model No.	5425	485	541	650	760	541	650	760	513	617	736	873	558	782	903	1268	1525	2332
Overall Dimensions (in.)																		
Height	48 1/2	53 1/2	51 1/2	56 1/2	57 1/2	51 1/2	56 1/2	57 1/2	51 1/2	56 1/2	57 1/2	62 1/2	57 1/2	62 1/2	66 1/2	66 1/2	73 1/2	73 1/2
Width	24 1/2	25	28 1/2	28 1/2	31 1/2	28 1/2	28 1/2	31 1/2	29 1/2	29 1/2	32 1/2	33 1/2	32 1/2	33 1/2	38	48	49	68 1/2
Depth	24 1/2	25	26 1/2	26 1/2	26 1/2	26 1/2	26 1/2	26 1/2	26 1/2	26 1/2	26 1/2	27 1/2	26 1/2	27 1/2	29	29	29	29
Storage Capacity																		
Gross food storage (cu. ft.)	4.68	5.2	5.89	6.98	8.22	5.89	6.98	8.22	5.89	7.03	8.22	9.59	8.22	9.59	10.71	14.9	17.95	26.95
Net food storage (cu. ft.)	4.25	4.85	5.41	6.5	7.6	5.41	6.5	7.6	5.13	6.17	7.36	8.73	6.58	7.82	9.03	12.68	15.25	23.32
Total shelf area (sq. ft.)	8.2	9.89	11.17	13.88	16.76	11.17	13.88	16.76	10.66	12.8	14.43	17.7	12.94	16.2	18.42	25.05	30.63	45.55
Ice Cube Trays																		
No. of trays	2	3	4	4	6	4	4	6	3	4	4	4	4	4	4	6	7	9
No. of cubes	42	63	84	84	126	84	84	126	81	108	108	108	81	108	108	162	189	243
Weight of cubes (lbs.)	4 1/2	6 1/2	9	9	13 1/2	9	9	13 1/2	10 1/2	14	14	14	15	18	18	28	31	37
Thickness of Insulation (in.)																		
Sides	2	2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	3	2 1/2	3	3 1/2	3 1/2	3 1/2	3 1/2
Bottom	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	3	2 1/2	3	3 1/2	3 1/2	3 1/2	3 1/2

NOW!

.. the biggest advertising and sales promotion program in 3 years on G-E refrigerators



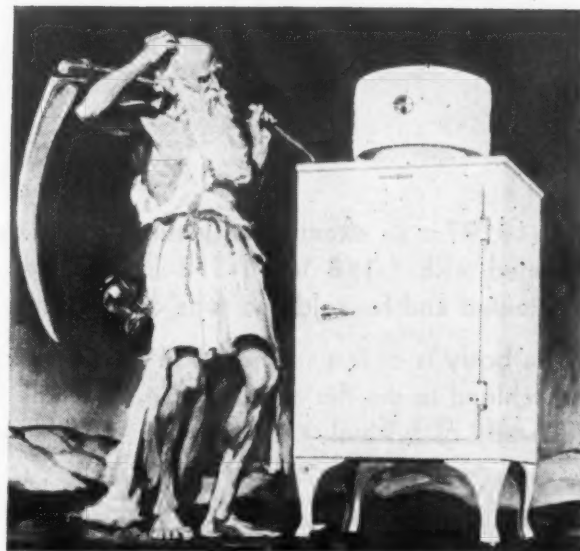
The greatest refrigerator sales story ever told!

"HOW long will an electric refrigerator last" is the question General Electric will ask the buying public in 1935. The biggest advertising and sales promotion program in 3 years will broadcast the message to millions.

This year will see a rediscovery of true refrigerator values. The refrigerator that can "take it"—and with a performance record that *proves* it over a period of years—is the one that will out-sell and show the greatest *net profit*

when the retailer's books are finally balanced.

The matchless performance record of the General Electric sealed-in-steel refrigerator mechanism is the greatest refrigerator sales story ever told. It will be featured in General Electric's big 1935 advertising and sales promotion campaign. *You* can profit. Write or wire for details. General Electric Company, Specialty Appliance Sales Department, Section DF11, Nela Park, Cleveland, Ohio.



GENERAL  **ELECTRIC** *All-Steel Refrigerators*

LETTERS

The following letter was recently mailed to a selected list of manufacturers and their advertising agencies:

Selling Problem

Business News Publishing Co.
5229 Cass Ave., Detroit, Mich.

Gentlemen:
Mr. H. W. Mateer—my good friend and our Advertising Manager—has just accepted a flattering offer from the McGraw-Hill Co. to become an executive with their electrical and radio publications.

Because of the importance of this position, and the substantial salary increase involved, I could not even attempt to hold him with us. And being an old McGraw-Hill man myself, as was also Mr. Mateer, I release him to this company with better grace than I could to anyone else.

However, his leaving just at this time when we are bringing out the 1935 REFRIGERATION DIRECTORY AND MARKET DATA BOOK creates a rather serious problem in connection with the advertising for this DIRECTORY with the closing date only a month away.

Mr. Mateer had planned to call on you relative to DIRECTORY advertising. This, of course, is now impossible. I do not want to send a green, untrained representative to see you. So please understand that this lack of personal contact doesn't mean that we do not want or do not appreciate your business.

I am reasonably sure that you recognize the value of the REFRIGERATION DIRECTORY AND MARKET DATA BOOK. No doubt you contemplate using it. But if you do have any doubt or hesitation about the value of this service, I will try to clear it up by mail or long distance telephone.

In the meantime may I make a personal request that you glance over the enclosure. You may have seen it already, but I suggest you study it again. It tells quite a complete story.
F. M. COCKRELL.

Following are some of the replies to the above letter received by Mr. Cockrell:

Sporty Attitude

Fedders Mfg. Co., Inc.
Buffalo, N. Y.

Dec. 21, 1934.

I have your letter of Dec. 19, and note your remarks relative to Mr. H. W. Mateer's recent appointment as a member of the McGraw-Hill Publishing Co. We certainly are always glad

of the success of our fellow-workers, and you are to be commended for the sporty attitude you have taken in conjunction with the situation confronting you.

I assure you that we recognize the value of the REFRIGERATION DIRECTORY AND MARKET DATA BOOK, and therefore I do not believe it will be necessary for you to use the long distance phone to sell us further on the merits of these periodicals, from an advertising standpoint.

Our advertising agency, Horace M. Laney, has all the data on this, and I am accordingly referring copy of this letter to him.

May I take this opportunity to wish you and all your boys a Very Merry Christmas, as well as a Happy and Most Prosperous New Year.

W. D. KEEFE,
Sales Manager.

Ex-McGraw; Ex-Hill

Chambers and Wiswell, Inc.
38 Newbury St., Boston, Mass.

Dec. 22, 1934.

Publisher:

Your letter of Dec. 19 to Mr. Chambers has been routed to my desk.

You have doubtless ere this received our order and copy for a page for Virginia Smelting Co. in your 1935 REFRIGERATION DIRECTORY AND MARKET DATA BOOK, these having been mailed to you on the 20th.

In this connection I venture to advance the thought that—although we are of course glad at any time to see any representative of your organization—the selling-job has been done so well that you may almost automatically count upon us to use you to any extent consistent with clients' best interests.

As a former Hill man and McGraw man—but not a McGraw-Hill man—let me compliment you on the publishing job you are doing; wish Mr. Mateer all success in his new connection; and yourself a Merry Christmas.
FRANK R. FARNHAM.

Bread on the Waters

The Matheson Co.
East Rutherford, N. J.

Dec. 22, 1934.

We thank you for yours of the 19th, and congratulate Mr. Mateer on the promotion that has come to him; it is a merited acknowledgment of his ability; and while it is tough on you, hardships borne in the cause of a friend always bring their reward, and we join with you in wishing him every success in his new field.

Please register us as repeating last year's advertising in the REFRIGERATION DIRECTORY.

With the kind assistance of the duPont company, we are issuing a series of semi-humorous direct mail pieces, of the first of which we enclose you a copy. We hope to issue one of the series each month for the first three months, and after

determining the reception and selling power of the advertisement may continue them through the summer.

We again condole with you on the loss of Mr. Mateer's intimate co-operation, but believe that the bread you cast on the waters will return to you and promptly.

Wishing you the Compliments of the Season,

A. M. MATHESON,
President.

Very Able Man

Wood Conversion Co.
360 North Michigan Ave., Chicago
Dec. 27, 1934.

Publisher:

I was very much pleased to receive your letter of Dec. 20, and of course I am glad to know that Matt has improved his condition, but very sorry to think that I will not have the pleasure of a periodical visit with him. He is a very able man.

We have made arrangements to increase our space in the 1935 REFRIGERATION DIRECTORY to a full page and you will receive the copy through our advertising agency—The Buchen Co., Chicago—in the near future.

D. H. CORLETTE,
Sales Manager,
Railroad & Industrial Department.

Salesman Not Needed

Filtrine Mfg. Co.
51-53 Lexington Ave., Brooklyn
Dec. 26, 1934.

Publisher:

In response to yours of Dec. 19. We have planned to again take at least two quarter pages in your 1935 DIRECTORY and possibly a third quarter page.

If you will keep me posted as to closing times and reserve for us similar space and location to that we had last year I see no reason why you should have any one call on us.

THE FILTRINE MFG. CO.

Order Placed

Kold-Hold Mfg. Co.
Olds Tower Bldg., Lansing, Mich.
Dec. 26, 1934.

Acknowledging your letter of Dec. 20, I regret to learn that Mr. Mateer is no longer with your organization and quite appreciate the frank opinion from you on his new position.

Last week we wrote our advertising representative, Mr. John C. Stevens, c/o Stevens, Inc., Association of Commerce Bldg., Grand Rapids, requesting that he place a half-page advertisement in your REFRIGERATION DIRECTORY AND MARKET DATA BOOK for 1935, consequently if you have not already heard from Mr. Stevens, you will shortly, and in the meantime we are forwarding him your letter of Dec. 20 together with copy of this letter.

W. G. FARNSWORTH,
General Manager.

Going to Europe



ARCH BLACK

NEW YORK CITY—Arch Black, chief engineer of Melchior, Armstrong, Dessau Co., will sail for Europe on Jan. 12 to visit customers and prospects for American refrigeration and air-conditioning equipment, according to Jack Marshall, general sales manager of the company. Mr. Black will sail on the S. S. Champlain.

Dun & Bradstreet Reports Improved Appliance Sales

NEW YORK CITY—Substantial improvement in production and sales over a year ago is reported by manufacturers of electrical equipment and supplies, according to a survey of the electrical supply trade recently completed by Dun & Bradstreet, New York City. Increase in volume has varied to a considerable extent in individual cases, but it is conservatively estimated that the average is from 15 to 25 per cent above that of 1933.

During the first nine months of 1934, total volume of business placed with manufacturers of electrical equipment exceeded that for the corresponding period of last year by approximately 50 per cent, and it is anticipated that 1934 will show the best record in several years. Employment and payrolls have remained at a higher level than a year ago, being estimated at 10 to 12 per cent ahead. Most manufacturers have shown substantial profits despite the fact that increased volume has not compensated for higher production costs.

Widened distribution has characterized the electrical supply markets throughout the current year, new highs being recorded for many articles. Production and sales increases in tonnage and dollar volume ranging from 25 to 40 per cent have been reported. Although the rehabilitation program under the direction of the Federal Housing Administration has been to some degree responsible, the major part of the increase has been attributed to a demand for heavy electrical equipment including motors, generators, transformers, lighting fixtures, and wiring.

Heavy demand for household electric refrigerators, ranges, water heaters, vacuum cleaners and other labor-saving appliances and devices for the home, has been an important contributory factor in the volume increase. Winter production of electric refrigerators is expected to be the heaviest on record now that the purchase of refrigerators may be financed with loans under the provision of the National Housing Act.

Outstanding sales gain has been conceded to electric refrigerators for the year, but the rate of increase has been nearly as high for washing machines, ironers, irons, mixers and other appliances, some totals being as high as 50 to 60 per cent above comparative figures for 1933. Influence of the hot Summer just passed, caused double demand for electric fans and also created a strong demand for air-cooling units.

Pre-Christmas sales of table grills, toasters, and percolators indicate that the highest total for these units in four years will be reached. Sharp increase has been noted in sales of lamps, particularly those of modernistic design.

The substantial increase in sales of appliances and other electrical energy users, has resulted in boosting power-load requirements as indicated by the rise in electric output, to 1,705,413,000 kilowatt-hours during the fourth week of November, the highest point since January, 1931. Number of domestic customers is reported to be the highest in the industry's history, and the increased use of appliances in homes together with gradual expansion of industrial activities gives indication that in the early part of 1935 the all-time peak of December, 1929, recorded at 1,869,021,000 kilowatt-hours, will be surpassed.

The general outlook for the electrical supply trade for the coming year is looked upon as the most favorable that has existed since the pre-depression days of 1923.

Chest Models Helped Increase Sales of Texas Dealers

BEAUMONT, Texas—Graphic evidence of how the introduction of a chest model electric refrigerator boosted sales in certain sections of the Southwest can be found in a report recently made by Gulf States Utilities Co.

The utility handles General Electric refrigerators but has adopted a selling policy designed to give dealers handling other lines more of a break.

When G-E introduced its "liftopt," the company debated the advisability of handling the chest model for a time, according to P. E. McChesney, vice president, but finally decided to.

Because they did not have chest models of their respective lines available at the time the G-E "liftopts" were ready, all dealers were given an opportunity by the utility to share the initial public curiosity and waiting market.

"After selling 'liftopts' for 30 days (three carloads of them), we reported results as follows," states Mr. McChesney.

"In August, 1931, dealers sold a total of 89 refrigerators. In 1932, the figure was 85. In 1933 combined sales for August were 173 units.

"This past August, 'despite' the introduction of the 'liftopt' these same dealers sold 225 units of the line they were handling. The chest model desires the lion's share of credit for the increase.

"Better proof of this is found in a comparison of July and August figures. Never in history have August total sales in any year exceeded July sales. But they did this year. The dealers sold 214 refrigerators in July. August sales, to repeat, were 225.

"Sales by the utility showed similar improvement, sales of Monitor Tops being 119 this August against 54 last August, and compared to 75 in July.

"Dealer sales, plus utility sales, plus sales of chest models by both dealers and utilities, totaled 605 for the month compared to 227 last August and 289 in July of this year.

"We think this 30-day record is a pretty good indication that the chest models are not a menace to regular lines if dealers will conscientiously sell up. Our own experience proves that the little machine is a valuable leader. Many Monitor Top buyers were 'liftopt' prospects when they walked into our stores."

The mechanics applied in offering the chest models are explained by Mr. McChesney as follows:

A cash price of \$87.50 (delivered) on the "liftopt" and terms of \$2.50 down, \$2.75 a month, were announced. Price included five years' protection.

A floor sample was placed with each dealer, and dealer names were included in the utility's advertising. Dealer sales were turned over to the utility for collection, the dealer receiving 20 per cent commission.

The majority of Gulf States sales of the chest models were made to the low-income group of prospects, according to Mr. McChesney.

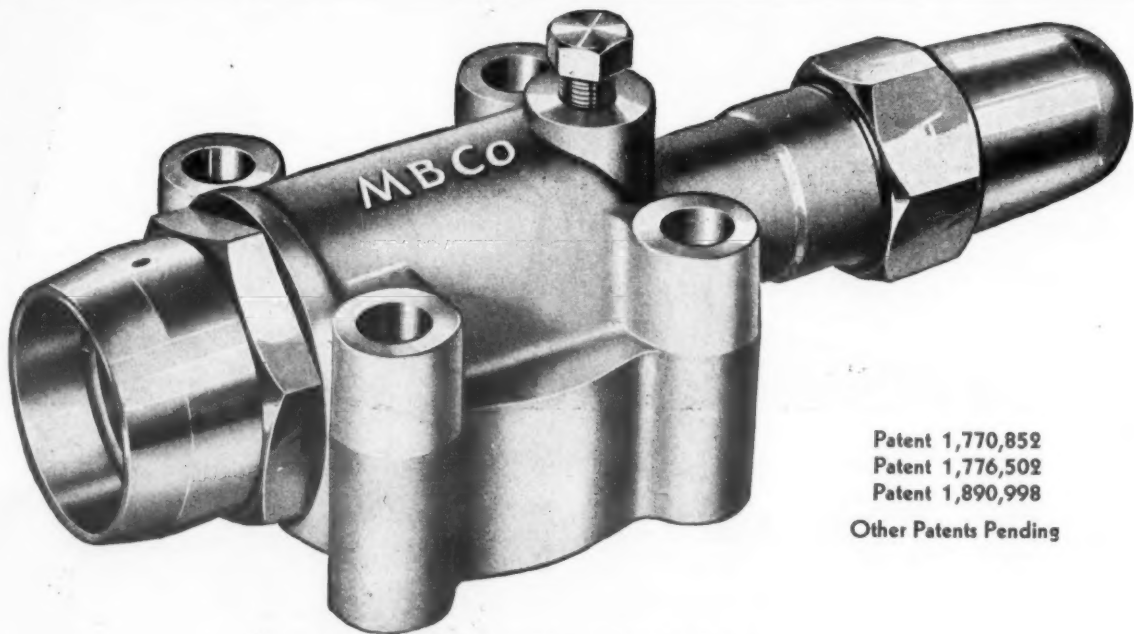
WILL THE DEALERS
who are conscious of the value of Artificial Food Display and who want to know how to obtain a full Refrigerator Display, for less than \$5.00, inquire from their source of refrigerator supply, or by writing the
CINCINNATI DOLL CO.
Artificial Food Department
311-313 E. 12th St., Cincinnati, Ohio.

ANSUL'S
Single Standard
OF
Excellence

The Ansul tradition . . . to make as fine refrigerants as it is possible to produce . . . was established years ago. That this ideal has never for a moment been lost sight of is evidenced by the reputation for high quality products that has been established.

You will find Ansul Sulphur Dioxide and Ansul Methyl Chloride perfect for refrigeration purposes. Quality is guaranteed because every cylinder is given an individual analysis.

ANSUL CHEMICAL CO.
MARINETTE - WISCONSIN



A-13197 Shut-Off Valve

A-13197 is an exceptionally sturdy valve designed for large commercial units. It is furnished with 1-1/8 in., 1-3/8 in. and 1-5/8 in. tube connections incorporating our patented end for soldered tube connections.

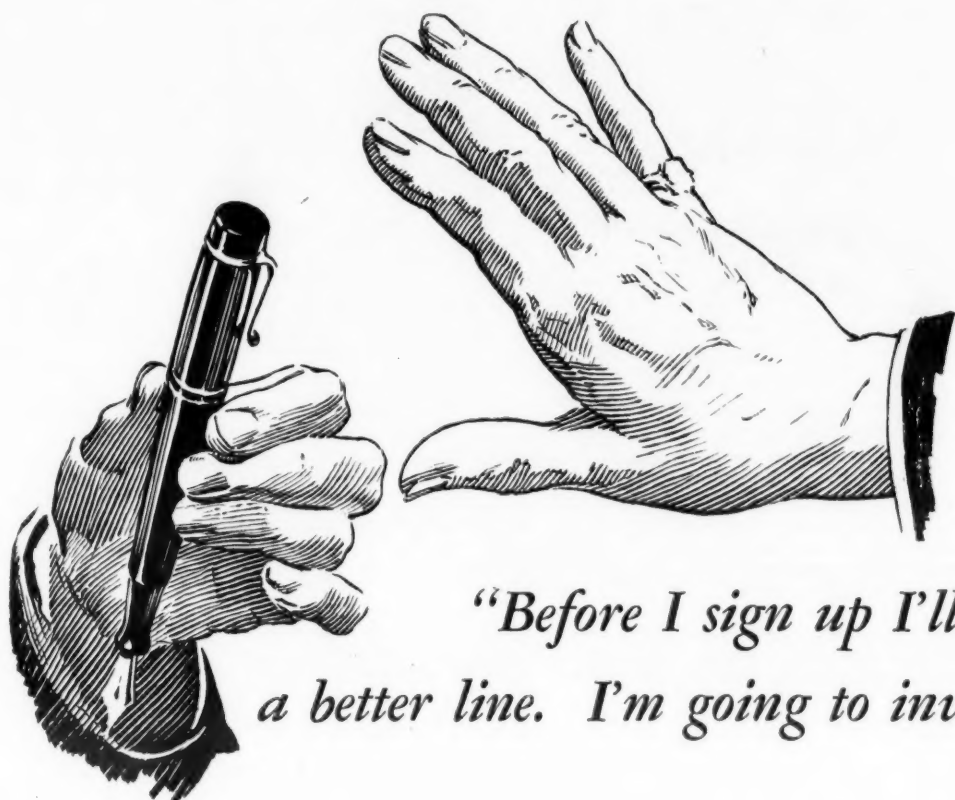
The body is of forged brass-bolt hole centers 2-1/2 in. The compressor surface can be machined to the flat or york type, or to the customer's particular specifications. The stem is made of Tuf-Stuf, an extra-strong corrosion resisting alloy which will not seal itself to the seats. The valve is double-packed.

All Mueller Brass Co. valves and fittings are furnished full flow, equal to inside diameter of tubing used, assuring unrestricted passage of the refrigerant.

Send for our Catalog R-2 illustrating and describing a complete range of valves and fittings, etc. for electric refrigeration work.

MUELLER BRASS CO.
Port Huron, Michigan

Patent 1,770,852
Patent 1,776,502
Patent 1,890,998
Other Patents Pending



"Before I sign up I'll want to know if there's a better line. I'm going to investigate a little further."

WHO ELSE MAKES A GOOD LINE OF ELECTRIC REFRIGERATORS? \ \ Naturally the wide awake distributor and dealer will ask **THAT** question.

New distributors—new dealers—are constantly entering the refrigeration field—one of the liveliest and most fruitful in American business.

At the very outset every such distributor and dealer ask these questions: What makes of refrigerators are available to me? What make should I handle? What manufacturer offers me the best opportunity—the most profitable proposition?

Likewise present dealers and distributors are constantly making changes in their lines. Dissatisfaction, customer preferences and many other reasons dictate the advisability of choosing a different source of supply.

Such distributors and dealers ask exactly the same set of questions as the newcomers in the field.

All of these men are good, hard-hitting business men and merchandisers. Otherwise they would not choose to enter the electric refrigeration field. The best ones do not wait for salesmen to call on them—they take the initiative—they do the investigating.

And where do they turn to see who has what they need in refrigeration? Naturally to the REFRIGERATION DIRECTORY AND MARKET DATA BOOK—the official buyer's guide and recognized register of all trademarked refrigeration products.

Wouldn't you do just this if you were a distributor or dealer looking for a line of refrigerator units or cabinets? Of course you would. That's just plain common sense.

Every manufacturer of electric refrigeration

equipment is listed under his classification in this Directory without cost to himself.

But the manufacturers who get the best advantage from the Directory are the ones who supplement such listing with a real sales message of their own—an advertisement telling prospective distributors and dealers what they have to offer. These are the ones that you would contact first and foremost. For the concerns that advertise intelligently are likely to use equal intelligence in most of the other phases of their business.

You need an advertisement in the 1935 REFRIGERATION DIRECTORY AND MARKET DATA BOOK. Your own good business judgment will indicate that to you. The rate is low—\$100 a page, 2 pages \$180, 4 pages \$320. Forms close January 20th. Reserve your space now.

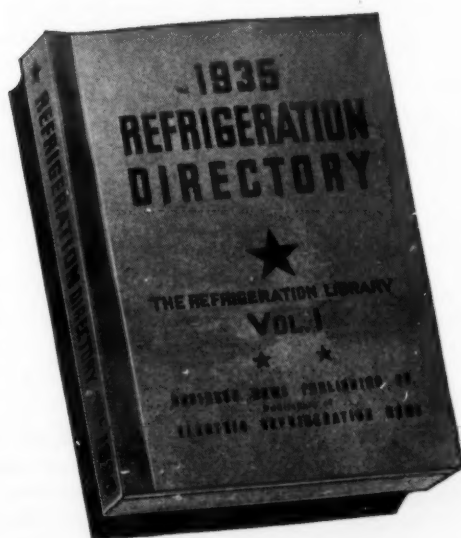
The 1935 REFRIGERATION DIRECTORY AND MARKET DATA BOOK—in two volumes—which will be issued Feb. 20—price \$5.00 per set postpaid in the United States and all countries in Pan-American Postal Union. In combination with a year's subscription to ELECTRIC REFRIGERATION NEWS, \$6.50. For all other countries (except Canada) the price of the books will be \$6.00 per set. In combination with the News, \$9.00.

BUSINESS NEWS PUBLISHING CO.

5229 Cass Avenue - Detroit, Mich.

VOL. 1—1935 REFRIGERATION DIRECTORY

Recognized industry register of all trademarked refrigeration and air-conditioning products. Four complete sections—(1) Alphabetic list of manufacturers; (2) Index of trade names; (3) Classified list of refrigeration equipment, parts and materials with all sources of supply; (4) Geographical directory giving name, address, telephone number, and products of manufacturers. Independent service companies and jobbers of supplies, parts, and materials included.



VOL. 2—1935 REFRIGERATION MARKET DATA BOOK

Veritable encyclopedia of information on refrigeration and air-conditioning industries. All known facts and figures recording development up to date. Systematically arranged and tabulated. Subdivision by territories and types of products for market and sales analysis. Included are household, commercial, and air-conditioning sales statistics—survey of distributive channels—merchandising activity—potential market and other essential data.



SERVICE

How to Service Compressor Shaft Seals

CHICAGO—Methods of servicing compressor shaft seals, including instructions for discovering seal leaks, remedying noisy seals, removing seals for repair, flushing them to remove obstructions between the ring and the shaft, lapping seal rings, and replacing the seal, are described in lesson 24 of the refrigeration home study course prepared by the Refrigeration and Air Conditioning Institute located at 2130 Lawrence Ave., Chicago, Ill.

The lesson first reviews earlier instruction in compressors, pointing out that most modern compressor seals incorporate either a bellows or a flexible flat diaphragm to maintain gas-tightness between the revolving crankshaft and stationary parts of the crankcase. Fig. 1 shows a flat diaphragm type of seal being removed from its compressor.

Leaky Seals

Seal leaks generally are due to particles of dirt lodged between the rotating and stationary surfaces. Less common causes include bellows which are cracked or which are not well soldered to the flanges, worn or scratched sealing surfaces, and corrosion on the surfaces which should fit smoothly together.

Leaky seals allow the escape of refrigerant and the entrance of air just the same as do any other leaks, and they may be detected with the regular methods for locating leaks with the different refrigerants.

If the seal leaks badly you can often notice the odor of certain refrigerants, and you are likely to find considerable quantities of oil around the end of the crankshaft and generally around the base of the compressor.

Sometimes the seal on a new compressor will leak slightly until the machine has been run for a considerable length of time, and then the surfaces will wear down to a good fit and the trouble will correct itself. However, as a general rule, a seal leak means you will have to remove the offending parts and make the necessary repairs or replacements.

Noisy Shaft Seals

In order that they may run smoothly and quietly, the parts between which there is relative motion in the seal must be continually lubricated. If for any reason they lack sufficient oil there will be a squeaking noise. If the difficulty has not continued long enough for the surfaces to become roughened, the remedy is simply more oil.

But if the machine has run for very long without lubrication the wear and scoring will cause a leak and more extensive repairs are necessary.

A squeaking seal may result from a

Shaft Seal

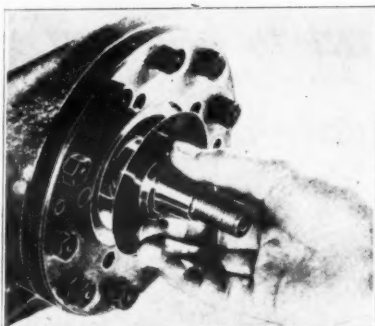


Fig. 1—Shaft seal with flat diaphragm being removed from compressor.

refrigerator having been idle for sufficient time to allow all lubricant to drain from the seal. Some constructions allow you to introduce oil through a plugged hole or an oil cup.

In other cases it will be necessary to remove the seal cover according to instructions, and then to flood the seal with oil. After doing this, operate the switch to run the machine a few seconds and then stop it a few seconds until the intermittent running has taken place 15 to 20 times to get the oil thoroughly worked into the surfaces.

Sometimes a seal squeak may result from some parts of the mechanism rubbing on the rotating crankshaft. The remedy is to remove the seal parts and apply light grease inside the bellows or on whatever parts may be touching the shaft. One recommendation for a squeaky seal not due to lack of oil is to reverse the direction of rotation of the driving motor and run the compressor backwards for about 30 minutes.

Removing the Shaft Seal

The construction of sealing devices differs quite widely in the various makes and models of refrigerators, and in taking any of these machines apart you should note very carefully the exact position of each and every part so that you may be sure to reassemble them in correct position.

Typical Household Compressor Seals

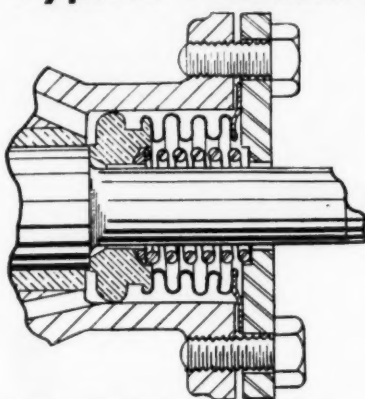


Fig. 2—Bellows seal and cover plate which is used for the seal of Kelvinator compressors.

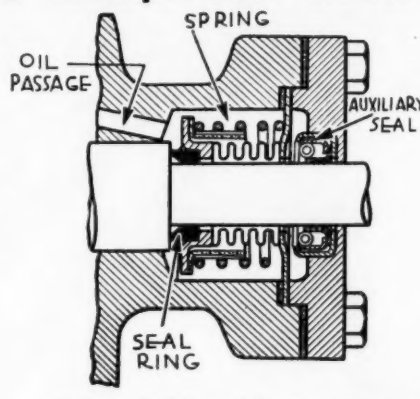


Fig. 3—Section of Stewart-Warner compressor shaft seal, showing auxiliary seal in cover plate.

Be especially sure that you know how to get everything all the way back into its original position so that none of the delicate parts may be jammed and damaged.

The seal is at the flywheel end of the crankshaft. This is the only end that extends out through the crankcase, the other bearing being tightly enclosed by the case itself or by a gasketed cap or plate.

The first step in removing a seal is to balance the pressure in the compressor. This prevents entrance of air and prevents loss of more than a small quantity of refrigerant while the seal is out of place. The next step is to remove the flywheel, which may require the use of a special wheel puller, and which must never be done by prying on the wheel or shaft.

Now you can remove the cover which holds the seal in place. This may be a plate held in place with a number of screws or bolts, or it may be a large hollow nut which may be unscrewed and removed.

In some constructions the plate holding the seal in place is so large its removal will open the interior of the crankcase clear down below the oil level. When you find such a large plate, drain the oil from the compressor crankcase before removing the plate. Carefully measure the quantity of oil removed, and when you reassemble the job put back this same quantity of fresh oil.

It is a wise plan to examine the side of the crankcase which carries the end of the shaft opposite the flywheel. Some compressors have a pressure spring and thrust bearing held in place with a cap nut or plate at this end of the shaft, the idea being to keep the shaft pushed through against the seal at the flywheel end.

If you have reason to suspect such a device, remove this cover and release spring tension before taking out the seal cover.

Finally you are ready to pull out the sealing parts which consist of either the bellows or flat diaphragm, of the seal ring, the pressure spring, the retainers and other parts according to the particular design you are working upon. In many cases you can remove all these parts while the compressor is mounted in the chassis, but then again you may have to begin this work by removing the entire compressor.

Flushing the Seal

Leaks of refrigerant gas and oil through the seal oftentimes may be stopped, even when quite bad, by momentarily drawing the seal ring away from the shaft to let a rush of gas and oil from the crankcase carry away any obstruction.

To do this flushing you will have to obtain a considerable pressure in the crankcase by letting the machine stand idle for some time or by leaving the door open and warming the evaporator with hot water in the ice trays. Then, with pieces of wood which will not scar the metal parts, pry the seal apart for an instant to allow the flushing action.

Wipe away all traces of oil from around the seal and then let the compressor operate in a normal manner for a day. After that period of running, examine the machine to find whether the leak has stopped. You may have to repeat this flushing several times.

Whether the parts can be reached for this kind of an operation depends on the construction of the machine.

Examining the Parts

After the parts of the seal have been removed, wash them with gasoline and a soft brush. Also wash the part of the crankcase which forms one contact surface of the seal. Then examine the seal contacting surfaces very closely for scratches, roughness, corrosion or excessive wear.

The seal ring is of rather soft material, while the crankshaft surface is of relatively hard steel. Therefore, you often will find the steel shaft in perfect condition while the seal is more or less scratched or is damaged to an even greater extent.

If the shaft surface is in perfect condition, showing full contact all the way around, it will be necessary to make corrections only on the seal

ring. If the shaft is only slightly scratched, it may be lapped to a good fit. But if the shaft is badly damaged it will have to be replaced with a new one, or else the surfaces will have to be made perfect on a lathe with a grinding attachment or other suitable machine tool for this kind of work.

If the seal ring is in fair condition, its contact surface may be lapped to obtain a good fit, but if there is pitting, corrosion or excessive wear, the ring should be replaced with a new one, and the new part lapped to a perfect fit.

Lapping the Seal Ring

The contact surface of the seal ring, when only slightly scratched or worn, may be lapped to a fit by using

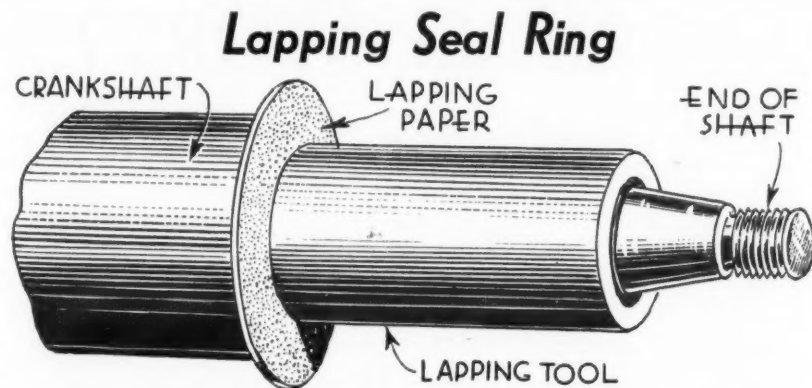


Fig. 4—How to use special lapping tool described above.

proper methods. Never attempt this work with ordinary grinding compounds or ordinary abrasive materials because hard particles will become imbedded in the soft metal of the ring and will continue to cut after things are put back together. There are various methods of lapping, the following being one of the best.

Use the metal surface plate or a piece of perfectly flat plate glass such as is used in valve lapping. Mix a thin paste of the lapping material with clean oil, and spread it thinly and evenly on the plate.

Then press the sealing surface of the ring lightly on the paste and move it around in a figure 8 motion, lifting the ring about every third time around to let the paste get back between the surfaces. After continuing this for a short time, remove all paste from the ring surface by washing with oil and examine the contacting area.

This may be done with three different pastes, one to cut away the damage, one to get a smooth surface, and the third to produce a polish. The first paste is made by mixing Bon-Ami with oil or powdered Tripoli with oil. The second is made with powdered sulphur and oil. The final polishing material is a mixture of finely powdered graphite and oil.

The graphite not only produces a polish, but fills the tiny openings or pores in the metal with this material, which is a very effective lubricant in itself even when no oil is present. The surface is made free from blemishes with the first paste, is made perfectly smooth with the second, and simply polished with the graphite.

Another method of removing the blemishes is to lay a sheet of crocus cloth on the surface plate or sheet of glass, place a few drops of oil on the crocus, and then rub the ring on the cloth until the surface is smooth. The work is finished by the usual polishing.

Still another method of reseating the ring is to use a perfectly flat and true oil hone on which the contact surface of the ring is rubbed with the same motion used on the surface plate.

Some makers furnish special lapping papers which fit around the surface of the shaft which forms one of the seal surfaces. With the paper in place, as in Fig. 4, a special lapping tool consisting of a tubular piece of metal is slipped over the end of the shaft and rotated by hand to smooth and polish the shaft surface.

A similar paper, but of a grade suitable for the material in the ring, then is placed over the shaft, the ring is put in place against the paper and rotated to obtain the desired smooth surface.

It is possible to reseat both the ring and the shaft surfaces at one operation by making a paste of Bon-Ami and oil or powdered Tripoli and oil just a little thinner than the ordinary tooth paste. This paste is spread evenly over the surface of the seal ring, the ring is placed on the shaft and pressed firmly against the contact surface, then turned back and forth.

The way to work is to turn the ring part way around, then back again, but turn it farther in one direction than the other so it gradually moves around the shaft. Apply additional paste several times during the operation, and continue the work until both surfaces are clean and smooth.

If the shaft surface alone is to be lapped, you can use an old ring which is perfectly smooth and true, apply the paste to this ring and then use it on the shaft just as though you were lapping both members. Many shops are equipped with special shaft lapping tools which carry the paste and press on the shaft with tension from a light spring, being made so they are easily rotated back and forth by hand.

When the sealing surfaces have been brought to the necessary smoothness and polish, wash away every trace of the pastes with gasoline and a brush, or with clean oil on a cloth. If you

(Concluded on Page 7, Column 2)

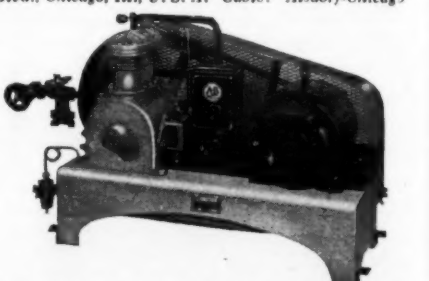


FOR AIR CONDITIONING

They give that low-cost, trouble-free service that builds lasting good will. Investigate the added advantages of using Reliance Condensing Units for all types of refrigerating duty.

GALVANIZED STEEL FINNED COILS Made of steel throughout. Positive METAL-TO-METAL contacts. Will not lose original efficiency because of oxidation between tubes and fins.

RELANCE REFRIGERATING MACH. CO. 3409 N. Kedzie Ave., Chicago Export Div.: A. J. Alsdorf Corp., 223 W. Jackson Blvd., Chicago, Ill., U. S. A. Cable: Alsdorf-Chicago



1/3 TO 30 TONS DAILY CAPACITY

RIGHT

There is but one answer to this question or to the matter of fittings. Either fittings are "right" or they are "wrong". Right fittings mean a great deal to the job on which they are installed and often spell the difference between satisfaction and discontent.

Commonwealth Fittings for the refrigeration industry are "right" when they leave the plant, and are "right" when they reach the user.

To begin with, every fitting is seepage-proof, machining is done to close limits, each piece is 100% inspected and, finally, every tube seat is protected in shipping with a cardboard ferrule to prevent nicks and bruises.

More than 25 years experience in the design and manufacture of fittings is back of Commonwealth Brass Corporation Fittings.

BUILT RIGHT TO STAY TIGHT

COMMONWEALTH BRASS CORPORATION

Commonwealth Avenue at Grand Trunk R. R.
DETROIT, MICH.

DRESS UP

your Display Cabinets...

- ★ The glossy black Ace Hard Rubber Door Frames, Rails, Jambs, etc., offer an attractive contrast to solid white porcelain bodies and because of the sanitary nature of Ace Hard Rubber, and its other advantages, dealers everywhere prefer to install cabinets built with our equipment.
- ★ CATALOGUE FREE to manufacturers on request

AMERICAN HARD RUBBER COMPANY
11 Mercer Street, New York, N. Y.
Akron, Ohio • 111 West Washington St., Chicago, Ill.

Norge Compressor Seal

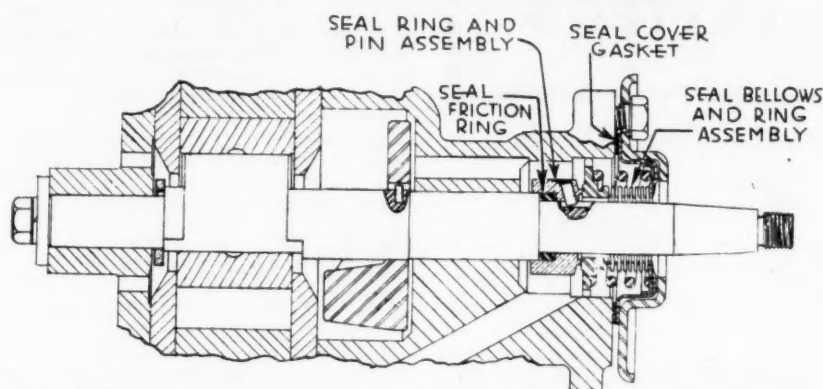


Fig. 5—Details of shaft seal and cover used on Norge rotary compressors.

Safety Switch



New 30-ampere safety switch developed by Cutler-Hammer especially for air-conditioning equipment, oil burners, unit heaters, etc.

Modernistic Case Is Featured on New C-H Switch

MILWAUKEE—Modern appearance is emphasized in the design of No. 4140, a new safety switch introduced by Cutler-Hammer, Inc., of this city.

Meeting requirements for a 30 ampere switch, and listed as standard by the Underwriters' Laboratories, the new addition to the C-H line is particularly adaptable to air conditioning equipment, oil burners, electric unit heaters, and as entrance switches.

Although the switch is small (3½x5½x3½ inches) ample wiring space has been provided to simplify installation. To facilitate wiring, the complete mechanism can be removed by loosening two screws, the wires pulled through and the mechanism replaced. Top, bottom, side, and rear knockouts permit easy mounting.

The toggle mechanism, front operated, is double pole, positive make and break, and the switch is of the fusible type.

To insure long life, the operating lever has been made of a special arc resisting laminated horn fibre with provision for padlocking in either the open or closed position.

The switch is finished in black baked enamel with cadmium trim.

Sands to Discuss Use of Nickel in Steel

NEW YORK CITY—J. W. Sands, development and research department, International Nickel Co., Inc., will be guest speaker at the Jan. 10 meeting of the Worcester Chapter of the American Society for Metals.

He will discuss the value of nickel in increasing resistance to fatigue of metals as well as in accentuating toughness of steel; the increase in depth hardening qualities of nickel steel over those of plain carbon steel with the resulting possibility of quenching in a milder cooling medium and consequent prevention of quenching stresses; and the ability of nickel to increase the fatigue-tensile ratio of heavy or intricate steel sections which are not amenable to quenching and tempering treatments.

Keystone Economist Wins G-E Prize

CLEVELAND—S. Dorothy Shatzer, Keystone Appliances, Inc., Harrisburg, Pa., distributor for General Electric appliances, won the kitchen planning contest conducted by the G-E home service and kitchen planning department, it was announced last week.

The jury of award, composed of P. B. Zimmerman, A. M. Sweeney, Carl Snyder, and Victor Civkin, announces other prize winners as follows:

Second prizes, Althea Lepper, Rex Cole, Inc., New York City; third prize, (split four ways) Margaret E. Burge, South Carolina Power Co., Charleston, S. C.; Frances Howard, Carolina Power & Light Co., Florence, S. C.; Lena B. Briggs, Oklahoma Gas & Electric, Enid, Okla.; Alma Harshbarger, H. G. Bogart Co., Toledo.

How to Replace & Test Bellows

(Concluded from Page 6, Column 5) use gasoline, wipe the parts dry with a cloth and then oil them.

Testing the Bellows

While you still have the seal apart you should test the bellows to see that there are no leaks. Lay a piece of thin, soft rubber, such as a piece of inner tube, on the surface plate or piece of glass and place the seal flat on this rubber with the bellows extending upward.

Fill the bellows with gasoline, hold another flat piece of rubber over the top and press lightly on the top piece. The gasoline will be forced out through any leak in the bellows or in the joints.

Replacing the Seal

When you are ready to put the parts of the seal back in place, carefully clean all around the crankcase recess which holds the seal by using a clean cloth which is free from lint and which is wet with clean oil. Be sure all the parts have been thoroughly cleaned by washing them with oil, with gasoline or with carbon tetrachloride. The latter two washes must be followed with oil.

Be certain the contacting surfaces of the seal are well oiled. Always use new gaskets between the plate or other cover and the surface of the crankcase. If the seal parts have been out of place for some length of time, purge the compressor before reassembling.

With everything back together, build up a pressure of about two pounds in the crankcase and low side of the system by keeping the refrigerator door open and by keeping hot water in the ice trays.

Run the compressor, and if your compound gauge shows any lower pressure, stop the machine until you get at least two pounds again. This is to prevent any air from being drawn in through the seal during the time the surfaces are being run in to make a perfect fit. You should run the machine this way for about a half hour.

The next step is to test for leaks at the seal. For this operation you want a fairly high pressure in the low side, something like 20 lbs. This pressure generally may be obtained by heating the evaporator.

If heating won't do the work, connect a piece of tubing from the gauge port of the low side service valve. Then you can open these valves to let enough high side pressure back into the low side to get a satisfactory pressure test for seal leaks.

Dr. Curme to Receive Perkin Medal

BROOKLYN—The Perkin Medal of the Society of Chemical Industry is to be presented to Dr. George O. Curme, Jr. on Friday night, Jan. 11. The presentation will be the feature of a joint meeting of the Society of Chemical Industry, the American Chemical Society, the Electrochemical Society and the Societe de Chimie Industrielle to be held that evening at 7:30 o'clock at The Chemists' Club, 52 East 41st Street, New York City.

The award has been made in recognition of Dr. Curme's work in the field of synthetic organic chemistry. This branch of the chemical industry will be discussed by Dr. Curme.

C. I. T. to Handle Sparton Radio Financing

JACKSON, Mich.—C. I. T. Corp. has announced an agreement with the Sparks Withington Co. of this city for the purchase of Sparton dealers' radio instalment paper. It will operate on a basis containing the following four points:

First, C. I. T. will advance 90 per cent of the unpaid balance; secondly, the maximum length of time on any contract is 12 months; third, minimum down payment is \$10 or 10 per cent; fourth, dealers must meet with a minimum net quick worth requirement of \$2,500 to be eligible.

Science Popularized In Radio Program

BROOKLYN—A new departure in cultivating popular interest in scientific matters was inaugurated several months ago through the medium of radio. It is based on the premise that the average person, and more particularly the housewife, is interested in knowing the whys and wherefores of the many operations performed daily in the home, and in learning new and more efficient methods based on sound scientific principles.

Under the title "Science in Your Home" a program is being presented every weekday afternoon at 4:30 over station WOR. It is under the direction of Foster D. Snell, Inc., consulting chemists of Brooklyn, N. Y., and Dr. Kurt W. Haeseler of that firm is the speaker, with occasional guest speakers.

The program consists chiefly of talks either on products used in the home or on operations carried out in the home. To illustrate, the ever-present problem of dish washing has been discussed as a scientific process. There have been discussions of the

nature and applicability of various types of polishes and cleaners.

Or again, there have been explanations of how candles burn, why fruit stains should be removed while fresh, how to care for books, and of ways to use to advantage common household chemicals such as baking soda or salt.

Dr. Haeseler also answers specific questions from listeners and gives constructive suggestions for solving individual problems, which have ranged from removing ink stains from a silk dress to refinishing the living room ceiling.

Business Improved in St. Louis Area

CINCINNATI—J. H. Souther, Crosley district manager for Missouri, Illinois, and Iowa, who visited the Crosley factory here recently, reports that business in the St. Louis trading area is improved considerably over any of the past four years.

The battery radio set business in particular is excellent, he reported, indicating that the farmer is "coming back" as a prospect for electrical appliances.

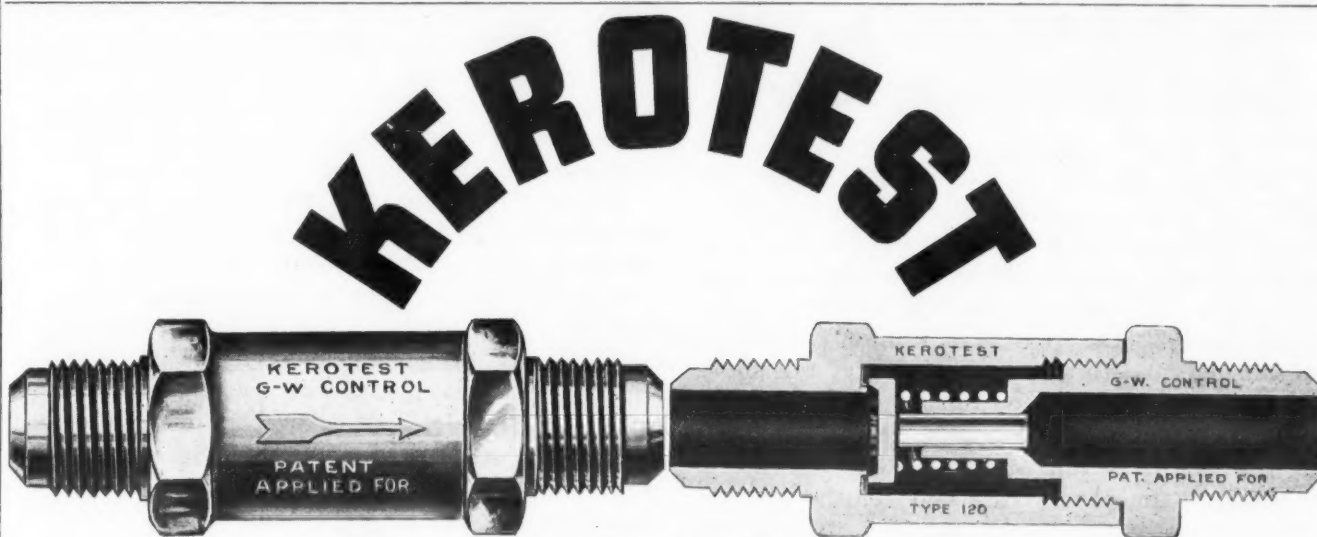
Electrolytic Condenser Used in Refrigerators

BROOKLYN—After having been established for several years in radio practice, the electrolytic type condenser is now finding industrial uses, according to Howard Rhodes, chief engineer of the Aerovox Corp.

"The outstanding application of industrial electrolytic condensers is, of course, for condenser-start motors," according to Mr. Rhodes. "The units are in common use for ¼ and ½-hp. motors used mainly in electric refrigerators, oil burners, washing machines, home workshop drives, office appliances and other small-power applications. However, condenser-start motors with electrolytic condensers are being built up to 5 hp., he states.

Melco Catalog Lists Replacement Parts

NEW YORK CITY—The December issue of the "Refriguide" issued by Melchior, Armstrong, Dessau Co. lists a wide variety of Frigidaire and Kelvinator replacement parts, including compressor parts, float valves, belts,



Actual size illustration of Kerotest Type 120 G-W Control for ½" O. D. Tubing. Standard sizes also include ¾" and 1" O. D. Tubing.

- ★ Prevents the flow of gases in the suction line from one coil to another on multiple installations
- ★ Eliminates condensation of warm gas in colder coils
- ★ Stops frosting of the suction lines
- ★ Shortens running time of compressor
- ★ Makes positive temperature control possible
- ★ Pays for itself in a short time

... a highly developed and very sensitive suction line back pressure valve, so designed that it will not interrupt the proper return flow of oil ... ruggedly constructed to meet the most severe service demands of any refrigeration system such as single coil or domestic multiple installations, soda fountains, ice cream cabinets, beer coolers, etc.

Kerotest G-W Controls ARE NOT two temperature valves. The delicate bronze coil spring needs no adjustment whatsoever and is just strong enough to hold the valve seat in a closed position until incoming pressure exceeds the common line pressure.

The pressure drop through the G-W Control is very negligible and is used and recommended by leading refrigeration manufacturers.

INQUIRE ABOUT G-W CONTROL FROM YOUR NEAREST KEROTEST REPRESENTATIVE LISTED BELOW or write for descriptive literature.

KEROTEST MANUFACTURING CO. . . . PITTSBURGH, PA.

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A. E. Borden Co.	Home Appliance Service Co.	Melchior, Armstrong, Dessau Co., Inc.
Brooklyn, N. Y.955 Third Ave.	Houston, Texas306 M & M Bldg.	Pittsburgh, Pa.901 Pennsylvania Ave.
Coleman Electrical Supply Co., Inc.	D. C. Lingo Co.	Williams & Co., Inc.
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Kerotest Manufacturing Company	Allied Refrigeration	Refrigerating & Power Specialties Co.
Cincinnati, OhioBurbank St.	Los Angeles, Calif.1015 E. Sixteenth St.	Seattle, Wash.314 Ninth Ave., No.
Merkel Bros. Co.	Kerotest Manufacturing Company	Harrison Sales Co.
Cincinnati, Ohio2118 Spring Grove Ave.	Refrigeration Service, Inc.	Sioux City, Iowa2310 E. Eighth St.
Williams & Co., Inc.	Milwaukee, Wis.512 N. Water St.	National Refrigeration Service
Cleveland, Ohio1748 E. 22nd St.	Chase Brass & Copper Co., Inc.	Springfield, Mass.576 Main St.
Williams & Co., Inc.	Minneapolis, Minn.145 N. 10th St.	Home Utilities Service Supplies Co.
Dallas, TexasThe Electromotive Company	Chase Brass & Copper Co., Inc.	St. Louis, Mo.3337 Market St.
Decatur, Ill.133 Williams St.	Montreal, Que., Canada637 Craig St.	Kerotest Manufacturing Company
Field & Shorb Co.	Railway & Engineering Specialties, Ltd.	Syracuse, N. Y.314 W. Fayette St.
Denver, Colo.14th at Lawrence	Newark, N. J.Jefferson & Chestnut Sts.	Syracuse Supply Co.
The Auto Equipment Co.	McIntire Connector Co.	Toronto, Ont., Canada32 Ontario St.
Des Moines, Ia.W. 11th & D.M.U.R.R.	New Orleans, La.813 Poydras St.	Railway & Engineering Specialties, Ltd.
C. L. Percival Co.	Enoch Sales Co.	Vancouver, B. C., Canada
	New York, N. Y.300 Fourth Ave.	Fleck Bros., Limited
	Melchior, Armstrong, Dessau Co., Inc.	

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G. C. Taylor (Local Stock)	Van D. Clothier (Local Stock)
Dallas, Texas215 So. Pearl St.	New York, N. Y.806 Graybar Building
Clarence E. Boren	K. M. Newcum
Dayton, Ohio257 Springbrook Blvd.	San Francisco, Calif.Merchant Exchange Bldg.
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Denver, Colo.1210 California St.	St. Louis, Mo.3337 Market St.
Robert L. Chambers	Robert H. Spangler

KEROTEST

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Two Million Units Next Goal for the Industry

FOUR years ago the now-defunct Electric Refrigeration Bureau set a goal of 1,000,000 units for the household electric refrigeration industry. Even though it recorded a substantial increase over any previous year, the industry couldn't quite reach the million mark in 1931. Again in 1932 the goal of a million units was established, and this time the industry fell short of the mark by some 160,000 refrigerators. In 1933, however, the industry just inched over the line, with the sale of 1,080,000 refrigerators.

All this time the young and healthy electric refrigeration business was battling its way up through a general depression. Other industries were flat on their respective backs; some sales curves looked like a descent down Pike's peak, others like a line drawing of Niagara Falls. But electric refrigeration progressed steadily and doggedly forward.

Last year the rigors of depression appeared to have abated somewhat, and general business went on the upgrade. The result was that electric refrigeration took—not the small but sure annual rise which had come to be expected of it—but a sensational leap forward. With estimated sales of 1,400,000 units in 1934, the electric refrigeration industry recorded unit sales 30 per cent greater in number than the all-time record which had been established in 1933.

Now. What about 1935? In a previous editorial we have quoted what various leaders of the refrigeration industry think about the future of the business. Almost without exception they believe that 1935 will turn out to be an even greater year than 1934. Major Howard Blood, president of Norge Corp. and vice president of Borg-Warner, even predicts a sales figure of 2,200,000!

Attaining the two-million-unit mark in 1935 does not seem to be beyond the realm of possibilities. The theorem that as general business conditions improve in arithmetical (2-4-8-16) ratio, electric refrigeration sales should jump in geometrical (2-4-16-256) ratio held true in 1934, and many observers believe that it should again obtain in 1935. Acceptance for electric refrigeration has become so universal, and the cumulative effect of the industry's advertising and promotion down through the years is now being felt so strongly, that the industry now seems in a position to progress by leaps and bounds, rather than by steps. As Vice President T. K. Quinn of General Electric puts it: "If general business is 10 per cent better, electric refrigeration sales should increase 20 per cent."

Setting a high goal frequently is extremely useful. Several manufacturers work on the theory that it's good business to establish quotas for their distributors which are probably higher than they can actually make. "Shoot at the sun," they say, "and at least you'll hit the moon." So perhaps it would not be unwise for the refrigeration industry to set for itself a goal of two million units in 1935—particularly since it doesn't seem impossible of attainment!

As a starter toward this program, President E. G. Biechler of Frigidaire Corp. has announced

that his concern intends to build 500,000 units in 1935. This is a pretty large order. Probably no single manufacturer has ever made that many refrigerating machines in one year before. Mr. Biechler is not only setting this high goal for his organization, but has retooled the two Dayton Frigidaire plants and installed new machinery at a cost of \$1,600,000 to produce this number of units. Which puts the issue squarely up to his sales organization: the factory is going to build half a million units—branches, distributors, and dealers must sell them.

Announcing this goal is perhaps one of the best psychological moves Mr. Biechler could make. For years he has guarded jealously all production figures on Frigidaire's output. His startling announcement of a 1935 production schedule of half a million units should give dealers and salesmen some idea of the size and importance of the manufacturer they are dealing with, and should make the quota of 10, 50, or 100 units which has been assigned them seem not nearly so large as it did when they first heard it. Incidentally, it should give the public in general and investors in particular a rough notion of the stature and possibilities of electric refrigeration as an industry. Nothing impresses or convinces like facts and figures.

Along this same line of thought it should be noted that the front page of this issue carries a report that Crosley has added to its manufacturing facilities to allow for a production of 2,000 refrigerators a day—practically doubling its previous capacity. These plant additions have been made at a cost of \$300,000. Powel Crosley, Jr., has never been considered a "spender"; and the fact that he is investing nearly a third of a million dollars in plant expansion should indicate that he really does expect his sales organization vastly to increase its already-fine 1934 record.

These leading manufacturing concerns have set high goals for their organization in 1935, and are proceeding on the assumption that the marks will be attained. With apparently everything favoring its chance to make it, perhaps it would be well for the refrigeration industry as a whole to adjust its sights toward a record of two million units to be sold during the coming year. That would be a lot of refrigerators; but there seems to be no reason now in view why the industry shouldn't be able to do it.

WHAT OTHERS SAY

Our Biggest Gain Has Been in Good Will

THIS editorial will be a little different from those that you have been accustomed to reading on these pages during the past year.

We have tried, heretofore, to deal fairly and frankly with practical subjects of large importance. Many of these have had to do with the reciprocal relationships between government and business.

Now, we want to choose the biggest subject of all. It has to do, not with present or prospective legislative or administrative measures, but with something that is basically much more important.

It has to do with good will.

This is, indeed, an appropriate season in which to deal with that subject. And, after all, good will between men, or between men and government, is of far greater importance than are the mechanisms which men build, or the government builds, for the purpose of protecting "rights" and keeping the peace.

There can be no permanent peace without good will.

There can be no good will without willingness to discuss and give honest consideration to views that may run contrary to one's own.

It has been said, and truly, we believe, that conformity to the Golden Rule would solve every one of our perplexing, present-day problems.

Probably none of us will live long enough to see human nature elevated to a position of personal unselfishness adequate to the general acceptance of the Golden Rule. Great growths do not happen overnight.

We believe, however, that the last twelve months have witnessed a longer step in that direction than any similar period in our experience. And this, despite the turmoil and conflict that have tended to obscure a real movement.

Government has become much more tolerant of the just necessities of business. The irascible "you're to blame" attitude of early New Deal days has vanished. Business has become more tolerant of the broad aims of the administration. Passivity and resistance are being replaced by a spirit of cooperation.

Therefore, in appraising the gains of 1934, do not stop with increased automobile sales, or carloadings or steel operating rates. Take cognizance of the substantial increase in good will.

For unless you do so, you will miss the biggest fundamental gain of 1934 and the most promising augury for 1935.—Iron Age, Dec. 27, 1934.

LETTERS

Fairbanks-Morse Replies

Fairbanks-Morse
Home Appliances, Inc.
Chicago, Ill.

Dec. 26, 1934.

Editor:

We note with interest Mr. Lindsay's excellent letter regarding "free refrigeration" in the Nov. 19 issue of ELECTRIC REFRIGERATION NEWS.

We can understand and appreciate Mr. Lindsay's attitude perfectly. The industry has for so many years depended solely upon efficiency of insulation and tightness of door gaskets to reduce thermal losses that we can expect some "viewing with alarm" of our effort to further reduce these losses by innovations in cabinet design. However, we never expect to be able to develop a box requiring no insulation whatever. In fact, our engineers are inclined to be more than merely exacting in our choice of insulating materials.

A perusal of Mr. Lindsay's figures show them to be of a purely hypothetical nature. Comparative costs to the user cannot actually be determined by computation of thermal losses. The "payoff" is on what the light company's meter shows.

Unfortunately it's the motor that consumes the current—and the curve of current consumption does not parallel the curve of thermal loss. Starting inrush to motor, number of starts and many other factors enter the picture on what it costs to operate an electric refrigerator.

The industry and Mr. Lindsay can rest assured that we are not using the phrase "three months free refrigeration" in any loose or vague fashion. We only ask that until such time, which will be shortly, as our commitment on the matter appears in national print over our own name, that judgment be reserved. In this day and age, few have the attitude of the farmer who told Wilbur Wright, "The contraption is heavier than air. It can't fly."

MORTIMER FRANKEL,
General Manager.

Number of Defunct Firms

General Electric Co.

1 River Rd., Schenectady, N. Y.

Editor:

Regarding your survey of defunct domestic electric refrigerator manufacturers, I wish you would give me the up-to-date information based on your previous survey of some years ago as follows:

Number who have ceased manufacturing household electric refrigerators now—?

Companies said to have ceased manufacturing household electric refrigerators but who cannot be reached by mail now—?

Your new survey was valuable as a reference book but so far it is not valuable to me as news.

C. M. RIPLEY.

Answer: It may appear that we should be able to furnish the desired information very easily. The fact of the matter is that the problem is quite complicated and will call for considerable detailed study of the data collected during the past summer.

Right now we are head over heels in the job of producing the 1935 REFRIGERATION DIRECTORY AND MARKET DATA BOOK and it is imperative that we take care of the scheduled requirements first.

No Free List

The Science Museum
South Kensington, London, England

Publisher:

I would inquire whether you would be willing to present to the National Collections in the Science Museum Library, your publication ELECTRIC REFRIGERATION NEWS.

The library is organized as a central library of science and technology to contain as complete as possible a collection of the periodical literature that constitutes the original record of discoveries and their progressive application in technology and industry.

The library possesses more than 12,000 sets of periodicals, including an exceptionally extensive collection of publications on refrigeration.

Every publication added to the library is recorded and minutely classified by means of the Universal Decimal Classification in its very detailed weekly list of accessions, which has a wide circulation.

In addition to its comprehensive collection of indexing and abstracting journals, the library collects and incorporates in a card index, all published references that are classified by the Universal Decimal Classification. These latter total about 150,000 annually, and the index now comprises more than 2,000,000 references.

The total number of bibliographical references in the library is estimated at 40 million. On application, this material is searched by the expert staff of the library for the prepara-

tion of lists of publications for the assistance of readers and inquirers.

E. B. MACKINTOSH,
Director.

Answer: We regret to inform you that we have no free circulation list whatever. ELECTRIC REFRIGERATION NEWS can be obtained only by paid subscription.

The publication of ELECTRIC REFRIGERATION NEWS is a commercial enterprise dependent entirely upon advertising and subscription revenue.

On Binding Back Issues

Servel, Inc.

51 E. 42nd St., New York City

Publisher:

I would like to get my ELECTRIC REFRIGERATION NEWS papers for part of 1933 and all of 1934 bound into two volumes as follows:

May to December, 1933—one volume (numbered 9).

January to December, 1934—one volume (numbered 10).

These I would like in the large black leather bindings with gold letters which you have previously made up for Servel.

Will you please advise me the cost of making up these two volumes before starting work on same.

I have all of the copies except one issue of March 14, 1934, which perhaps you could supply.

WM. R. HAINSWORTH,
Director of Engineering.

Answer: We believe that it would be advisable for you to secure the services of a local bindery if you want to use your file copies of ELECTRIC REFRIGERATION NEWS for the desired bound volumes. The cost of transportation both ways would add unnecessarily to the expense. Furthermore, it is quite possible that you can obtain as good a price, or better, from a local bindery.

Since the job would be special, there would be no advantage in having this work done by the company which takes care of our binding here in Detroit. We suggest that you consult the classified telephone directory to locate companies which specialize in this business.

Please note, however, that we can furnish you with bound volumes done in heavy paper board covers (not leather). During the past two years we have been making each volume cover four months only since we found that a full year makes a very unwieldy book.

Price of each volume is \$3.00, f.o.b., Detroit. A limited number of volumes are available, as follows:

Vol. 8—Jan. 4 to April 26, 1933.

Vol. 9—May 3 to Aug. 30, 1933.

Vol. 10—Sept. 6 to Dec. 27, 1933.

Vol. 11—Jan. 3 to April 25, 1934.

Vol. 12—May 2 to Aug. 29, 1934.

Vol. 13—Sept. 5 to Dec. 26, 1934.

'Russian-y' Mr. Wallace

Stevens & Wood, Inc.

Engineers and Constructors
30 Broad St., New York City

Publisher:

Since the earliest publication of your ELECTRIC REFRIGERATION NEWS, I have read it religiously and at each session of reading I thought of you repeatedly and of the days when you and I were in Illinois. By this I mean I have always held a friendly reverence for you.

Upon returning to the office after several days absence due to illness, I have been reading the News and note Mr. Taubeneck's editorial under the heading of "Personalities" on Henry Wallace.

In the first place, I am unable to ascertain what he is driving at in the editorial, and second, my opinion is that if Henry Wallace's old grandfather knew that his grandson had endeavored to regiment the American Farmer he would turn over in his grave and wish to remain buried. So far as I know, no one knows what has been or may be actually in Wallace's mind nor the methods in which he would obtain them but I do know that he and his program has sounded too "Russian-y" for me and I dislike very much to observe anything of a complimentary nature to appear in your paper. No criticism—just expressing my ideas.

J. HALL TRUMAN, JR.

Wrappers Complimented

P. O. Box 246
Long Beach, N. Y.

Editor:

Please pardon our delay in thanking you for the write up about the Passmore electric revolving shelves. I wish to subscribe to the News for one year and present it to my son, starting this business.

I like the nice way your News is wrapped to mail.

MRS. LENA E. PASSMORE.

Excellent Editorial

Frick Co.

Waynesboro, Pa.

Editor:

The entire industry should be grateful to you for the excellent editorial in your issue of Dec. 5. I wish I might be permitted to circulate copies of it freely.

D. N. BENEDICT,
Vice President & General Manager.

Rotary Compressors in Spotlight Among Exhibits at Leipzig Fair

By Patrick Mallon, American Vice Consul, Leipzig, Germany*

ALTHOUGH official figures covering the refrigeration section of the 1934 Leipzig Spring Fair are not available, it was estimated from personal observation that the number of exhibitors as well as the display space occupied by manufacturers of refrigeration machinery and ice boxes were considerably large than at the Spring Engineering Fair of 1933. As at previous fairs the bulk

of the exhibits consisted of small and medium sized refrigerators intended for use in households, and also for industrial use by independent handicraftsmen and small foodstuff dealers.

Large refrigeration machinery for use in warehouses, on steamships, and such purposes was not displayed at the fair, and customers interested in that type of machinery were referred to the factories.

Household Electric Refrigerators

Compressor refrigerators for household use and for small shops were almost exclusively equipped with rotating compressors, where the capacity of such machinery was below 1 hp. Larger units were equipped with reciprocating compressors.

A rotating compressor refrigerator in four sizes was shown, the capacities varying from 2 to 7 cubic feet. The refrigeration medium was sulphur dioxide which was circulated in a hermetically sealed system.

The circulation was effected by a small rotating compressor consisting of only three moving parts, namely, the rotor, the eccentric shaft, and the so-called "lineal," which takes the place of the valve required in plunger compressors.

The compressor drives the sulphur dioxide through a condenser with cooling ribs into the evaporator, the flow of the liquid being controlled by a float valve.

A small electric motor drives the compressor by means of a wedge-shaped rubber belt, both (motor and compressor) being mounted on a base which is suspended by means of springs, thus reducing vibration of the refrigerator.

The rotating compressor is located in a chamber filled to three quarters with oil for lubrication as well as cooling purposes. All parts of the refrigeration system except the evaporator are located in the upper section of the refrigerator, being thus separated from the cooling chamber.

The evaporator reaching into the cooling chamber is made of rustless steel so that it cannot be corroded by any foodstuffs or acids. The refrigerator has two trays for making ice cubes.

The temperature is automatically controlled by a thermostat which can be adjusted to three grades of temperatures. The door has a new type of lock which can be opened with the knee, if both hands are occupied.

The motor requires 1 kwh. per 24 hours and is air-cooled by means of a fan attached to the electric motor drive of the compressor.

Absorption Machines

Much interest was shown in compressorless refrigerators. These refrigerators have no moving parts and one of their most remarkable features is that they have no stuffing box. The compressorless refrigerators operate on the absorption principle.

While at former fairs there were shown only refrigerators using the dry absorption process, at this fair refrigerators equipped for permanent absorption were exhibited.

In the dry absorption process a solid chemical (calcium chloride) absorbs the refrigerating gas (ammonia). The refrigeration period lasts about seven hours.

During this time the gas pressure decreases according to the quantity of ammonia absorbed by the calcium chloride, so that at the end of the refrigeration period the electric current, which heats the calcium chloride for a period of about 30 to 40 minutes, is turned on by means of a switch reacting automatically to different degrees of pressure.

Through the heat generated by the electricity the gas which has been absorbed evaporates from the calcium chloride, thus increasing the pressure in the system.

When the normal quantity of gas has been set free again, the pressure switch automatically shuts off the electric current. The system is then ready for a new refrigeration period.

The new refrigerators exhibited at the fair repeated this process three times in 24 hours, while formerly the process worked only once in 24 hours. This new type of refrigerator is considerably smaller and requires a lesser amount of chemicals than the older types.

One manufacturer exhibited a new type of refrigeration machinery operated on the permanent absorption principle, whereby the electric current

heats the system without interruption as long as the refrigerator is in use.

The chemicals used in this process are ammonia, hydrogen and water. A very small refrigerator of this type, demonstrated at the fair, had a storage capacity of one cubic foot and sold at the very low price of RM 285.00 (about \$114). The refrigeration plant had a weight of only 11 kg (2½ lbs.) and the amount of electric current used was 2.3 kwh. per 24 hours.

Although the amount of current required by this refrigerator was about 130 per cent higher than for similar refrigerators acting on the dry absorption principle, it was pointed out that the electric current required for the new refrigerator is continuous over a period of 24 hours while refrigerators working on the dry absorption principle explained above require the electric current three times a day for periods of one-half or three-quarters of an hour.

Under these conditions electric power stations grant special reduced rates for the new type of refrigerator which more than offsets the 130 per cent higher consumption of current.

Another manufacturer introduced a new type resembling a drum with a capacity of about two cubic feet. The price was RM 365.00 (about \$146).

For use in tropical countries where no electric current is available a refrigeration plant which was driven by a two-cycle gas engine was shown. The engine was equipped with an electric starter and battery and was operated automatically by means of a thermostat control inside the refrigeration chamber.

The engine and compressor were equipped with special cooling devices rendering the refrigeration plant efficient for temperatures of 100° F.

In general it was noticed that nearly all refrigerators were equipped with rustless steel, enamelled panels, and other high grade material.

Commercial and Industrial Refrigeration

Special refrigerators were displayed for industrial use in large butcher shops, dairy shops, hotels, and other large establishments. Several model establishments were exhibited to demonstrate the proper location and construction of cold storage rooms. Machinery for air conditioning in various kinds of stores was exhibited.

Manufacturers of refrigeration machinery devoted special attention to the demands of the dairy products and agricultural industries. As the present policy of the German Government contemplates extensive agricultural relief measures, manufacturers anticipated an increased demand for such machinery from farmers and dealers in dairy products.

Displayed at very attractive prices were special milk refrigerators for use on small farms. These had a capacity for cooling 50 liters of milk per day. There was also shown a refrigeration plant with a capacity of 3,000 liters of milk per day, intended for use on very large farms.

A number of special refrigerators for use in restaurants for cooling wine were also shown. One of these had a capacity of 468 bottles. Another type was exhibited for cooling beer barrels.

For smaller restaurants which cannot afford such large and expensive machinery there were offered electrically cooled beer taps. The beer is syphoned through a cooling coil before reaching the faucet.

This type was shown at the last fair but, according to the statements of manufacturers, is now considerably improved.

Ice Boxes

There were considerably fewer ice boxes exhibited than electric refrigerators. These had a capacity ranging from one to five cubic feet.

The prices were so much lower than those of electric refrigerators that ice boxes are still very popular in spite of their comparative inefficiency.

It is claimed that the cost of ice is very little more than the expense incurred in connection with the operation of an electric refrigerator, but the greater amount of personal work and other inconveniences involved in the operation of ice boxes are more than offset by the wide difference in the original cost.

For industrial use there were offered special ice boxes for "dry ice." As the well-known Leuna Works of the I. G. Farbenindustrie A.-G. (German Dye Trust), located near Leipzig, manufactures most of the dry ice used in Germany, these boxes sold

especially well in central Germany which is easily accessible to the supply of dry ice.

There were also displayed a number of devices for the manufacture and preservation of ice cream in confectioneries, large restaurants, coffee houses, and similar places.

A set consisting of a drum with a capacity of about one cubic foot for the manufacture of ice cream and four preserving containers with a capacity of about ¼ of one cubic foot each attracted much attention. It was noticed that rustless steel is now used for drums, containers, and many other parts of such machinery.

Anheuser-Busch Indicted For Furnishing Retailers With Bar Equipment

WASHINGTON, D. C.—Anheuser-Busch, Inc. of St. Louis has been indicted for allegedly violating the NRA Brewing Industry Code by furnishing bar equipment to retail outlets, according to an announcement made here last week by Joseph H. Choate, Jr., director of the Federal Alcohol Control Administration.

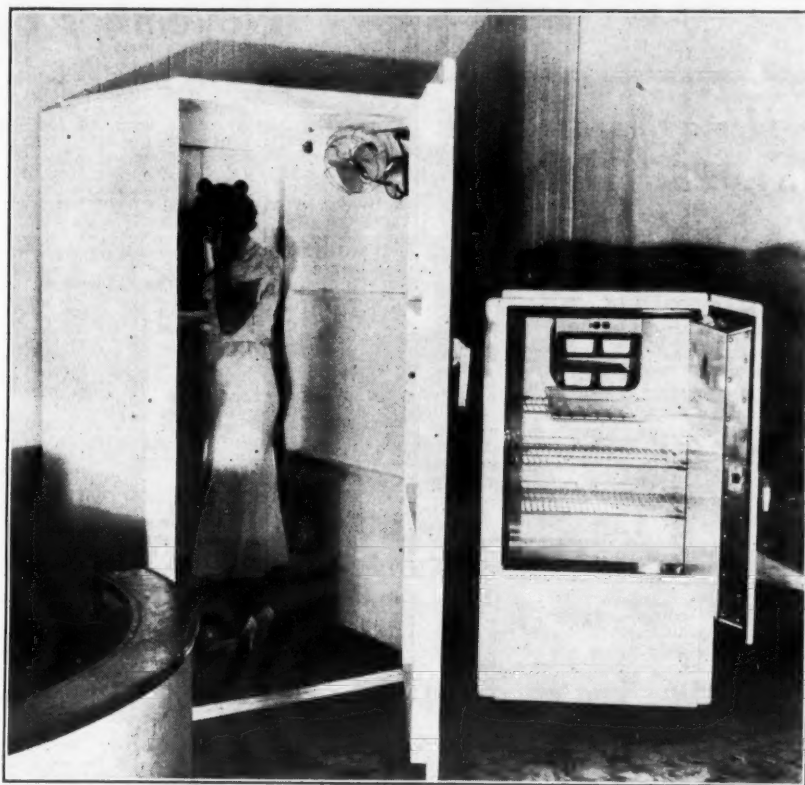
The indictment was returned by a grand jury in the U. S. District Court of western Louisiana.

"One of the most important purposes of the Brewing Code has been to prevent the brewing companies from securing financial control over the retail outlets," Mr. Choate is quoted as saying.

Georgia Power Customers Used More Current in '34

ATLANTA—For the 12 months ending November of 1934, average sales per residential customer of the Georgia Power Co. amounted to 874.6 kwh., an increase of 71.6 kwh., or 8.9 per cent over the previous year's average.

G-E 'Flat Top' as a Phone Booth



A replica of a G-E flat-top refrigerator is being used for a phone booth as a novel promotion stunt by a dealer in Kingston, Jamaica.

New Orleans Utility Is Westinghouse Dealer

NEW ORLEANS — By means of full-page newspaper advertisements the New Orleans Public Service, Inc., recently announced the opening of its new Westinghouse refrigerator dept.

J. J. Hope of Crosley Is A 'Kentucky Colonel'

CINCINNATI—John J. Hope, Jr., credit manager of the Crosley Radio Corp., and treasurer of the Crosley Distributing Corp., has been appointed a Kentucky colonel by Gov. Laffoon.

For over ten years our policies have been shaped to accomplish and maintain these objectives—a good name and the good will of the public and the trade. This is one reason why it is so generally said—"No units give more dependable service than those produced by Universal Cooler."



UNIVERSAL COOLER CORPORATION
DETROIT, MICHIGAN BRANTFORD, ONTARIO

MANUFACTURERS OF A COMPLETE LINE OF HOUSEHOLD AND COMMERCIAL REFRIGERATION EQUIPMENT

*Furnished to Electric Refrigeration News by Andrew W. Cruse, chief of the electrical division of the Bureau of Foreign and Domestic Commerce, Washington, D. C.

STATISTICS

13 Nema Firms MAKE
51,078 Household
Units in Nov.

The following figures, showing the number of electric refrigerators manufactured during November, 1934, are based on the reports of 13 members of the Refrigeration Division of National Electrical Manufacturers Association (Nema) listed in columns two and three.

HOUSEHOLD Lacquer (Exterior) Cabinets with Systems	Production** Quantity
Under 3.00 cubic feet..	2,681
1. 3 to 3.99 cubic feet..	63
2. 4 to 4.99 cubic feet..	7,737
3. 5 to 5.99 cubic feet..	8,225
4. 6 to 6.99 cubic feet..	3,792
5. 7 to 7.99 cubic feet..	2,149
6. 8 to 8.99 cubic feet..	47
7. 10 to 12.99 cubic feet..	19
8. 13 to 24.00 cubic feet..	.....
9. Total Lacquer	*24,694
Porcelain (Exterior) Cabinets with Systems	
10. Under 4.99 cubic feet..	1,000
11. 5 to 5.99 cubic feet..	56
12. 6 to 6.99 cubic feet..	210
13. 7 to 7.99 cubic feet..	37
14. 8 to 9.99 cubic feet..	19
15. 10 to 12.99 cubic feet..	.....
16. 13 to 24.00 cubic feet..	.....
17. Total Porcelain	*1,513
18. Total Lines 9 and 17....	*26,207
19. Separate Systems	14,426
20. Separate Household Low Sides	10,445
21. Total Lines 18, 19, 20...	*51,078
22. High Sides, 1/4 hp.	1,231
23. Cabinets—No Systems...	33,939
24. Total Household .....	.....
COMMERCIAL	
25. Water Coolers with High Sides	930
26. Water Coolers with No High Sides	12
27. Ice Cream Cabinets with High Sides	870
28. Ice Cream Cabinets with No High Sides	135
29. Beverage Coolers with High Sides	403
30. Beverage Coolers with No High Sides	323
31. Room Coolers with High Sides	23
32. Room Coolers with No High Sides .....	.....
33. 1/4 to 1/2 hp. Incl.	2,201
34. Above 1/2 to 1 hp. Incl..	956
35. Above 1 to 5 hp. Incl..	1,103
36. Above 5 to 10 hp. Incl..	1
37. Above 10 hp. ....	.....
38. Total Lines 33, 34, 35, 36, and 37	*4,261
39. Total Lines 25, 27, 29, 31, and 38	*6,487
40. Extra Commercial Low Sides	5,025
41. Miscellaneous Cases and Cabinets	1
42. Total Commercial .....	.....
43. Totals—Household and Commercial .....	.....

*These totals are not the sum of the breakdown figures as two companies do not report on individual items.
**One company did not supply figures on Production.

McCord

REFRIGERATION PRODUCTS

COMMERCIAL EVAPORATORS

DOMESTIC EVAPORATORS

CONDENSERS

METLFLX ICE TRAYS

SPIRAL FINNED TUBING

SPIRAL COPPER FINNED IRON

STEEL OR COPPER PIPE

McCord

RADIATOR & MFG. CO.

DETROIT, MICH.

32,458 Household Units SOLD in
November by 13 Companies

The following 13 member companies of the Refrigeration Division of the National Electrical Manufacturers Association (Nema) reported sales for November, 1934: Crosley Radio Corp., Frigidaire Corp., General Electric Co., Gibson Electric Refrigerator Corp., Kelvinator Corp., Leonard Refrigerator Co., Norge Corp., Servel, Inc., Stewart-Warner Corp., Sunbeam Electric Mfg. Co., Uniflow Mfg. Co., Universal Cooler Corp., and Westinghouse Electric & Mfg. Co. Member companies not reporting included: Apex Elec. & Mfg. Co., Jomoco, Inc., Merchant & Evans Co., and Sparks-Withington Co. The sales of the reporting companies do, however, include units manufactured for the following concerns: Major Appliance Corp., Montgomery Ward & Co., Potter Refrigerator Corp., Sears, Roebuck & Co., and Truscon Steel Co.

HOUSEHOLD Lacquer (Exterior) Cabinets with Systems	Quantity	Value	Domestic Sales	Quantity	Value	Canadian Sales	Quantity	Value	Other Foreign Sales	Quantity	Value
Under 3.00 cubic feet..	781	\$ 41,246	194	\$ 9,709	771	\$ 39,325	.....	.....	.....	.....	.....
1. 3 to 3.99 cubic feet..	61	3,942	.....	.....	73	4,808	.....	.....	.....	.....	.....
2. 4 to 4.99 cubic feet..	4,991	325,138	59	3,864	3,463	223,547	.....	.....	.....	.....	.....
3. 5 to 5.99 cubic feet..	4,760	396,478	29	2,224	786	63,331	.....	.....	.....	.....	.....
4. 6 to 6.99 cubic feet..	2,359	220,962	34	3,001	549	51,190	.....	.....	.....	.....	.....
5. 7 to 7.99 cubic feet..	2,546	278,669	31	3,543	256	26,853	.....	.....	.....	.....	.....
6. 8 to 8.99 cubic feet..	197	23,798	4	450	50	5,766	.....	.....	.....	.....	.....
7. 10 to 12.99 cubic feet..	30	6,322	.....	.....	4	798	.....	.....	.....	.....	.....
8. 13 to 24.00 cubic feet..	14	3,516	.....	.....	.....	.....	.....	.....	.....	.....	.....
9. Total Lacquer	15,739	1,300,071	351	22,791	5,952	415,643	.....	.....	.....	.....	.....
Porcelain (Exterior) Cabinets with Systems											
10. Under 4.99 cubic feet..	710	58,464	.....	.....	114	9,882	.....	.....	.....	.....	.....
11. 5 to 5.99 cubic feet..	935	91,762	1	80	191	18,014	.....	.....	.....	.....	.....
12. 6 to 6.99 cubic feet..	3,155	344,400	1	117	126	15,561	.....	.....	.....	.....	.....
13. 7 to 7.99 cubic feet..	3,016	381,141	2	34	98	11,965	.....	.....	.....	.....	.....
14. 8 to 9.99 cubic feet..	653	100,142	2	27	82	12,772	.....	.....	.....	.....	.....
15. 10 to 12.99 cubic feet..	123	23,321	1	196	34	5,934	.....	.....	.....	.....	.....
16. 13 to 24.00 cubic feet..	135	35,176	1	237	47	11,000	.....	.....	.....	.....	.....
17. Total Porcelain	8,730	1,034,405	8	1,245	692	84,563	.....	.....	.....	.....	.....
18. Total Lines 9 and 17....	24,469	2,334,476	359	24,036	6,644	500,216	.....	.....	.....	.....	.....
19. Separate Systems	60	1,068	2	177	323	16,630	.....	.....	.....	.....	.....
20. Separate Household Low Sides	168	2,917	4	82	429	8,457	.....	.....	.....	.....	.....
21. Total Lines 18, 19, 20...	24,697	.....	365	.....	7,396	.....	.....	.....	.....	.....	.....
22. High Sides, 1/4 hp.	243	13,165	4	216	576	33,460	.....	.....	.....	.....	.....
23. Cabinets—No Systems...	45	3,359	1	44	819	29,681	.....	.....	.....	.....	.....
24. Total Household	2,354,983	.....	.....	24,554	.....	588,491	.....	.....	.....	.....	.....
COMMERCIAL											
25. Water Coolers with High Sides	559	59,520	1	98	38	3,864	.....	.....	.....	.....	.....
26. Water Coolers with No High Sides	3	2,062	1	70	5	274	.....	.....	.....	.....	.....
27. Ice Cream Cabinets with High Sides	46	6,377	.....	.....	159	20,691	.....	.....	.....	.....	.....
28. Ice Cream Cabinets with No High Sides	59	7,227	.....	.....	23	3,213	.....	.....	.....	.....	.....
29. Beverage Coolers with High Sides	345	27,780	.....	.....	1	75	.....	.....	.....	.....	.....
30. Beverage Coolers with No High Sides	167	10,420	.....	.....	11	671	.....	.....	.....	.....	.....
31. Room Coolers with High Sides	2	1,524	.....	.....	18	4,051	.....	.....	.....	.....	.....
32. Room Coolers with No High Sides	46	7,714	.....	.....	5	708	.....	.....	.....	.....	.....
33. 1/4 to 1/2 hp. Incl.	988	78,167	32	2,780	1,963	101,706	.....	.....	.....	.....	.....
34. Above 1/2 to 1 hp. Incl..	531	64,130	20	2,607	230	30,850	.....	.....	.....	.....	.....
35. Above 1 to 5 hp. Incl..	349	78,136	1	161	74	13,233	.....	.....	.....	.....	.....
36. Above 5 to 10 hp. Incl..	11	4,984	.....	.....	2	1,112	.....	.....	.....	.....	.....
37. Above 10 hp.	2	833	.....	.....	.....	.....	.....	.....	.....	.....	.....
38. Total Lines 33, 34, 35, 36 and 37	1,881	.....	53	.....	2,269	.....	.....	.....	.....	.....	.....
39. Total Lines 25, 27, 29, 31, and 38	2,833	.....	54	.....	2,485	.....	.....	.....	.....	.....	.....
40. Extra Commercial Low Sides	2,329	86,685	70	2,141	1,659	48,285	.....	.....	.....	.....	.....
41. Miscellaneous Cases and Cabinets	22	6,020	7	578	5	1,499	.....	.....	.....	.....	.....
42. Total Commercial	441,638	.....	.....	8,430	.....	230,257	.....	.....	.....	.....	.....
43. Totals—Household and Commercial	\$2,796,621	.....	\$32,984	.....	\$818,751	.....	.....	.....	.....	.....	.....

STOCKS of Distributors & Dealers
Decrease during November

U. S. A. INVENTORIES, NOVEMBER, 1934											
HOUSEHOLD Lacquer (Exterior) Cabinets with Systems		Factory, Branch, and Warehouse		Distributors†		Dealers					
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value			
	Under 3.00 cubic feet..	21,092	\$1,111,908	3,670	\$ 188,672	2,971	\$ 155,391				
1.	3 to 3.99 cubic feet..	228	16,610	339	20,770	5	362				
2.	4 to 4.99 cubic feet..	45,545	3,015,729	10,549	678,980	7,385	479,096				
3.	5 to 5.99 cubic feet..	48,757	3,976,161	8,361	679,295	7,290	578,735				
4.	6 to 6.99 cubic feet..	24,960	2,385,510	5,433	514,290	6,789	600,913				
5.	7 to 7.99 cubic feet..	20,890	2,536,803	4,148	463,752	4,001	467,300				
6.	8 to 9.99 cubic feet..	3,791	441,783	691	85,271	1,233	139,443				
7.	10 to 12.99 cubic feet..	831	176,666	110	22,988	47	9,575				
8.	13 to 24.00 cubic feet..	127	34,449	46	11,257	3	645				
9. Total Lacquer		166,221	13,695,619	40,280	*3,224,991	29,724	2,431,460				
Porcelain (Exterior) Cabinets with Systems											
	Under 4.99 cubic feet..	8,745	701,835	1,116	97,334	1,302	110,028				
1.	5 to 5.99 cubic feet..	2,364	226,743	795	82,995	339	34,198				
2.	6 to 6.99 cubic feet..	2,938	331,917	2,681	314,883	2,972	340,524				
3.	7 to 7.99 cubic feet..	11,127	1,235,999	2,432	329,232	3,218	415,754				
4.	8 to 9.99 cubic feet..	2,526	377,244	1,503	232,136	1,693	248,938				
5.	10 to 12.99 cubic feet..	312	68,794	279	51,788	362	66,467				
6.	13 to 24.00 cubic feet..	1,497	370,195	357	88,816	152	35,063				
7. Total Porcelain		29,509	3,302,727	*13,725	*1,675,576	10,038	1,250,972				
8. Total Lines 9 and 17....		195,730	16,998,346	*54,005	*4,900,567	39,762	3,682,432				
9. Separate Systems		51,903	2,550,990	.....	.....	.....	.....
10. Separate Household Low Sides		6,057	99,293	277	5,215	93	1,601				
11. Total Lines 18, 19, 20...		253,690	.....	*54,282	.....	39,855	.....			
12. High Sides, ¼ hp.		1,597	81,186	194	10,422	74	3,935				
13. Or Less		83,842	3,558,097	38	3,082	3	367				
14. Cabinets—No Systems...		.....	.....	.....	.....	.....	.....
15. Total Household		23,287,917	.....	.....	*4,919,286	.....	3,688,335	
COMMERCIAL											
16. Water Coolers with High Sides		7,791	708,872	2,232	229,847	399	36,059				
17. Water Coolers with No High Sides		1,605	67,478	85	4,397	11	520				
18. Ice Cream Cabinets with High Sides		1,717	245,114	60	8,874	4	592				
19. Ice Cream Cabinets with No High Sides		2,158	278,342	186	22,914	15	1,732				
20. Beverage Coolers with High Sides		1,221	87,087	167	10,639	146	9,337				
21. Beverage Coolers with No High Sides		1,180	71,477	210	12,381	63	4,394				
22. Room Coolers with High Sides		2,148	613,151	311	64,921	155	33,334				
23. Room Coolers with No High Sides		2,015	480,697	233	27,012	33	3,731				
24. Extra High Sides ¾ to 1 ½ hp. Incl.		9,928	857,542	1,517	131,850	307	25,135				
25. Above 1 ½ to 1 hp. Incl..		4,177	547,622	981	130,649	231	29,339				
26. Above 1 to 5 hp. Incl..		2,869	628,344	752	153,216	99	45,814				
27. Above 5 to 10 hp. Incl..		130	77,427	9	5,616	.....	.....		
28. Above 10 hp.		119	109,850	.....	.....	.....	.....
29. Total Liner 33, 34, 35 36 and 37		17,223	.....	*3,363	.....	637	.....			
30. Total Lines 25, 27, 29, 31, and 32		30,100	.....	*6,133	.....	1,341	.....			
31. Extra Commercial Low Sides		22,579	782,015	3,285	124,628	699	19,592				
32. Miscellaneous Cases and Cabinets		668	193,309	142	42,719	9	5,511				
33. Total Commercial .....		.....	5,745,335	.....	999,663	.....	215,580
34. Totals—Household and Commercial .....		.....	\$29,033,245	.....	*\$5,888,949	.....	\$3,903,915

Real Property Survey Is Completed for 63 U.S. Cities

WASHINGTON, D. C.—Data covering the last 15 of the 63 cities included in the Real Property Inventory, nationwide government housing condition survey, has been released and is published in the adjoining columns.

Previous reports of the real property survey in 48 cities were published in the following issues of the News: May 23, 1934—Casper, Wyo.; Columbia, S. C.; Butte, Mont.; Nashua, N. H.; Burlington, Vt.; Paducah, Ky.; Boise, Ida.; Greensboro, N. C.; Little Rock, Ark.; Hagerstown, Md.; Reno, Nev.; Wichita Falls, Tex.

June 20, 1934—Sioux Falls, S. D.; Asheville, N. C.; Frederick, Md.; Albuquerque, N. M.; Baton Rouge, La.; Shreveport, La.; Austin, Tex.; Pueblo, Colo.; Oklahoma City, Okla.; Phoenix, Ariz.; Decatur, Ill.; Fargo, N. D.

July 11, 1934—Charleston, S. C.; Springfield, Mo.; Zanesville, Ohio; Jackson, Miss.; Lincoln, Neb.; Santa Fe, N. M.; Portland, Me.; Topeka, Kan.; Williamsport, Pa.; Richmond, Va.; Kenosha, Wis.; Knoxville, Tenn.

Oct. 10, 1934—Racine, Wis.; Dallas, Tex.; Trenton, N. J.; Lansing, Mich.; St. Joseph, Mo.; Sacramento, Calif.; Erie, Pa.; Binghamton, N. Y.; Des Moines, Iowa; Wichita, Kan.; Waterbury, Conn.; San Diego, Calif.

G-E Merchandising Clinic Opens Jan. 28

CLEVELAND — The annual merchandising clinic of the specialty appliance sales department of General Electric Co. will be held at Nela Park, Monday and Tuesday, Jan. 28 and 29.

While the program has not as yet been completed, a number of speakers have accepted places on the program. These include Channing E. Sweitzer, managing director of the National Retail Dry Goods Association; Kenneth Collins, vice president of Gimbel Brothers, New York; Princess Alexandra Kropotkin, of Liberty magazine; Charles Francis Coe, vice president, Maxon, Inc., New York; Nelson Wright and Edward Goldstein of May Co., Cleveland; W. L. Stensgaard, Chicago; Charles A. Wolcott, of Daniel Starch Surveys, New York; Amos Parrish, New York; and Herschel Lutes, divisional merchandising manager, J. L. Hudson Co., Detroit.

The program will cover various subjects relating to department store merchandising of electric refrigerators, ranges, dishwashers, and other electric home appliances.

R. C. Cameron, in charge of department store activities for General Electric's specialty appliance sales department, will act as chairman of the clinic. P. E. Zimmerman, manager of the department, will deliver the address of welcome.

89 Out of 236 Prospects Buy New Ranges

SAN ANTONIO — During a novel sales activity—"Old Range Round-Up"—conducted by the San Antonio Public Service Co. here, 236 prospect cards for ranges were filed by employees. Eighty-nine of these were sold new ranges.

Cash prizes amounting to \$150.00 were offered by the utility company. In addition to a \$50.00 prize for the oldest range traded in to a cooperating dealer during the campaign were cash prizes of \$50.00, \$25.00, \$15.00, and \$10.00 to be drawn for at the conclusion of the campaign. These prizes were limited to purchasers.

The "Old Range Round-Up" show on the display floor was carried out in modernistic style, each dealer's display representing a modern kitchen. A bonus was provided for employees of the company who participated in this campaign.

Crosley Issues Pocket Catalog on Ranges

CINCINNATI—Crosley Radio Corp. recently issued a "Dealer's Handy Pocket Catalog" which illustrates and describes 16 models of the 1935 line of all-electric radio receivers and five battery radios for use in unwired homes.

The booklet outlines a feature of the Crosley American, Foreign and all-wave receivers—"the radio frequency amplification is ahead of the first detector."

First G-E Imperial Range Sold in Columbus

COLUMBUS, Ohio—Ira M. Ink of the F. & R. Lazarus Co., local department store, recently sold the first G-E Imperial range in the Columbus territory of Bard & Barger, G-E distributor. The purchaser was G. W. Bibbee, Columbus attorney.

FINAL REAL PROPERTY SURVEY REPORT FOR 15 CITIES

	Wheeling, W. Va.	Jackson- ville, Fla.	Peoria, Ill.	Salt Lake City, Utah	Syracuse, N. Y.	Worcester, Mass.	Birming- ham, Ala.	Wilmington, Del.	Indian- apolis, Ind.	Atlanta, Ga.	Providence, R. I.	Portland, Ore.	St. Paul, Minn.	Minne- apolis, Minn.	Cleveland, Ohio
TYPE OF DWELLING No. of Structures															
Single family	28,649	30,345	28,158	34,341	29,007	21,709	68,431	12,228	76,035	54,401	53,872	88,710	53,159	74,609	132,567
Two family	5,019	3,669	1,526	2,066	10,676	6,950	12,597	4,047	15,027	11,259	26,458	1,958	8,533	14,730	45,932
Three family	179	25	54	26	678	6,794	28	420	55	80	11,773	80	187	307	14
Four family	262	440	170	246	626	513	474	91	757	1,085	1,883	477	786	1,897	3,422
Row house	129	8	8	171	61	184	190	1,914	212	167	132	101	54	92	233
Apartment	124	179	234	425	480	1,015	304	252	665	749	1,817	1,061	737	1,462	3,481
Other dwelling	1,790	864	996	583	1,981	1,383	680	1,854	2,056	1,526	4,372	1,139	1,718	2,762	16,920
Total structures	36,152	35,530	31,146	37,858	43,509	38,548	82,704	20,806	94,907	69,267	99,707	93,526	65,174	95,559	202,569
TYPE OF DWELLING No. of Dwelling Units															
Single family	28,649	30,345	28,158	34,341	29,007	21,709	68,431	12,228	76,035	54,401	53,872	88,710	53,159	74,609	132,567
Two family	10,038	7,338	3,052	4,132	21,352	13,900	25,194	8,094	30,054	22,518	52,916	3,916	17,066	29,460	91,864
Three family	537	75	162	78	2,034	20,382	84	1,260	165	240	33,519	240	561	921	42
Four family	1,048	1,760	680	984	2,504	2,052	1,896	364	3,028	4,340	7,532	1,908	3,144	7,558	13,658
Row house	566	40	37	871	231	926	839	12,275	1,135	778	748	556	271	615	1,311
Apartment	849	1,556	1,888	6,414	5,362	6,802	1,125	1,997	11,330	9,230	11,794	17,228	8,610	20,797	39,332
Other dwelling	2,969	1,408	1,885	1,355	4,694	3,600	1,152	2,804	4,282	4,075	9,794	2,712	3,395	6,327	39,877
Total dwelling units	44,656	42,522	35,862	48,175	65,184	69,371	101,721	39,022	126,029	95,582	170,175	115,270	86,206	140,317	319,181
AGE OF STRUCTURES															
0 to 4 years	1,273	2,279	3,058	2,432	2,614	1,983	3,291	1,736	4,821	5,024	7,144	5,864	3,095	6,602	10,913
5 to 9 years	3,098	8,889	4,538	5,264	8,342	5,566	22,679	2,586	16,894	13,996	14,481	21,887	9,666	17,731	38,389
10 to 14 years	4,023	5,095	2,689	4,578	4,087	3,387	11,959	1,555	11,349	10,153	8,002	15,291	8,816	14,065	30,357
15 to 19 years	3,724	4,598	2,750	5,076	3,566	3,073	10,985	3,148	10,188	8,095	7,537	12,335	8,203	12,694	27,578
20 to 24 years	3,382	5,373	2,543	4,474	3,605	2,799	9,553	1,554	9,855	7,961	7,961	13,538	6,984	10,086	18,083
25 to 29 years	3,225	3,378	2,101	3,647	2,703	1,814	7,918	1,018	7,278	5,099	6,156	9,551	4,933	7,844	14,098
30 to 34 years	4,236	4,180	3,533	4,524	3,976	3,084	9,836	1,306	10,242	10,232	9,632	7,165	5,099	7,601	18,575
35 to 39 years	1,811	516	1,634	1,924	2,309	2,239	2,322	867	5,258	2,503	5,898	2,597	3,833	4,467	9,621
40 to 44 years	3,843	855	3,834	3,685	5,635	5,086	2,882	2,644	10,835	4,459	11,949	3,901	9,031	9,552	18,522
45 to 49 years	4,674	220	4,080	2,096	5,325	6,222	821	3,010	7,540	1,569	14,200	1,257	5,275	4,835	14,650
50 to 54 years	1,921	40	361	114	1,202	2,778	13	1,332	443	73	6,998	38	155	171	1,605
55 years and over	132	107	25	44	145	117	23	50	104	103	366	102	84	201	178
Not reported															
CONDITION OF STRUCTURE															
Good	8,621	11,359	12,731	14,270	19,321	13,414	18,497	8,173	30,850	20,223	46,216	34,418	25,711	45,387	84,943
Needs minor repairs	17,103	16,182	12,793	15,422	19,893	20,491	40,534	9,823	45,337	30,094	44,010	42,553	28,250	37,300	88,289
Needs structural repairs	8,600	6,867	4,751	7,119	3,845	4,247	20,398	2,211	15,604	16,059	8,704	14,942	10,030	11,689	24,280
Unfit for use	1,787	1,109	845	998	357	328	3,244	551	2,883	2,844	605	1,523	1,133	1,323	4,880
Not reported	41	13	26	49	93	68	31	48	133	47	172	90	50	160	177
MATERIALS OF CONSTRUCTION															
Wood	31,366	31,611	27,561	11,537	39,969	36,432	76,158	8,427	85,118	56,270	96,529	87,181	47,125	56,008	179,566
Brick	3,996	2,114	2,350	23,209	2,471	1,117	5,136	10,331	6,970	12,043	1,901	1,162	1,102	4,640	20,365
Stone	60	119	32	83	90	41	346	434	88	127	124	100	188	268	188
Concrete	132	317	286	447	151	62	205	196	211	109	175	296	302	202	347
Stucco	421	1,248	657	2,192	725	833	649	1,167	2,052	585	852	4,633	12,673	34,181	1,396
Other	175	117	254	365	65	50	192	239	306	121	70	126	1,106	587	534
Not reported	12	4	6	25	38	13	18	12	62	12	56	28	25	53	93
GARAGES AND AUTOMOBILES															
Structures with garages	13,906	17,878	19,571	24,437	25,544	17,739	30,767	7,748	62,073	34,507	46,287	66,029	42,072	64,301	146,329
Structures without garages	22,182	17,586	11,545	13,364	17,551	20,721	51,875	13,010	32,589	34,672	53,237	27,384	23,046	31,398	56,004
Not reported	66	86	30	48	14	48	145	113	88	113	88	113	88	113	236
Car capacity	21,074	24,530	26,839	31,580	44,575	31,554	39,375	11,665	92,680	48,387	80,185	77,720	57,403	94,134	261,010
No. of automobiles	17,247	18,851	20,330	28,063	35,283	26,718	30,280	15,996	63,551	40,721	69,998	64,203	47,732	78,928	179,643
DWELLING UNITS															
Total dwelling units	44,656	42,522	35,862	48,175	65,184	69,371	101,721	39,022	126,029	95,582	170,175	115,270	86,206	140,317	319,181
Rental units (includes vacants)	25,397	30,765	17,754	24,668	37,755	43,717	72,498	22,328	80,519	68,702	108,127	59,858	44,048	81,091	196,352
No. occupied by owner	19,259	11,757	18,108	23,507	27,429	25,654	27,223	16,694	45,510	26,880	62,048	55,412	42,158	59,226	122,829
Occupied dwelling units	44,656	38,507	34,562	44,632	60,786	64,140	91,709	36,820	112,302	88,602	157,053	105,170	81,143	128,365	292,191
Vacant dwelling units	2,633	4,015	1,300	3,543	4,398	5,231	10,012	2,202	13,727	6,980	13,122	10,100	5,063	11,952	26,990
Vacancy ratio	5.9%	9.4%	3.6%	7.4%	6.7%	7.5%	9.8%	5.6%	10.9%	7.9%	8.8%	8.8%	5.9%	8.5%	8.5%
Extra families	3,237	5,213	3,059	3,327	4,394	2,948	9,516	1,908	12,113	10,991	7,924	5,882	7,491	6,928	21,099
DURATION OF OCCUPANCY															
0 to 5 months	6,045	10,012	7,097	8,815	9,322	8,265	19,278	5,123	25,076	24,112	20,324	21,357	13,600	25,686	49,983
6 to 11 months	3,600	4,904	3,272	4,142	5,604	4,401	9,747	3,096	13,405	11,326	11,560	10,180	6,346	12,188	29,965
1 year	4,092	4,849	3,509	4,602	6,590	4,478	11,001	3,792	12,736	11,238	17,052	10,357	8,150	14,014	34,466
2 years	2,806	2,958	2,131	2,856	4,396	4,401	7,358	2,511	7,404	6,453	12,152	6,316	5,188	8,417	21,804
3 years	4,236	4,265	3,416	4,701	6,541	7,881	11,757	4,390	10,842	9,568	19,958	10,457	5,787	12,743	31,295
4 to 9 years	7,396	6,000	5,775	7,613	11,730	12,883	17,225	7,299	17,842	12,581	31,646	20,585	14,028	21,901	57,861
10 to 19 years	8,217	8,332	5,720	9,815	10,152	10,255	17,123	7,123	17,072	13,835	26,838	16,419	22,377	23,677	48,463
20 years and over	5,400	1,606	3,614	4,637	6,755	7,757	4,393	3,444	7,815	3,714	17,108	7,472	9,779	10,934	18,457
Not reported	273	81	28	44	31	259	25	42	103	75	370	59	46	105	91
DURATION OF VACANCY															
0 to 5 months	1,029	2,322	720	1,938	2,196	2,556	4,121	1,386	7,500	4,230	6,010	5,683	3,201	7,823	14,187
6 to 11 months	323	585	195	493	743	699	1,403	258	2,523	1,195	2,072	1,600	674	1,575	4,750
1 year	327	455	183	408	627	746	1,476	211	1,914	749	2,034	1,217	537	1,189	4,175
2 years and over	781	559	146	673	804	1,021	2,991	220	1,675	754	3,688	1,540	605	1,288	3,763
Not reported	173	94	56	31	28	209	21	127	115	52	318	60	46	77	115
RACE OF OCCUPANTS															
White persons	40,508	24,878	38,991	44,192	60,261	63,733	51,497	39,007	100,871	61,824	155,224	104,215	80,000	127,340	274,451
Persons of other races	1,426	13,574	546	587	451	277	40,129	3,763	11,363	26,689	1,501	816	1,031	895	17,679

NEMA CHARTS SHOW SALES & STOCKS FOR 3-YEAR PERIOD

Dollar Value of Household Sales

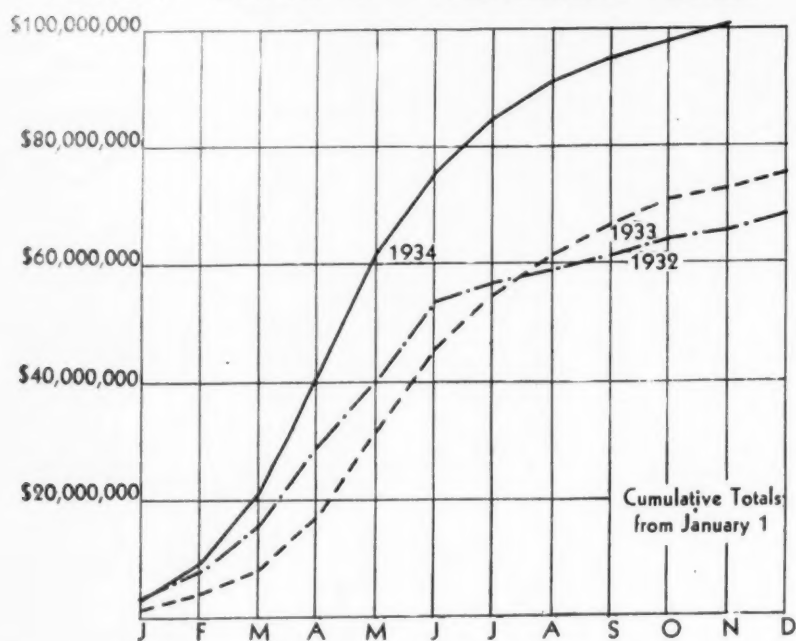


Fig. 1. Cumulative annual dollar volume of Nema household sales.

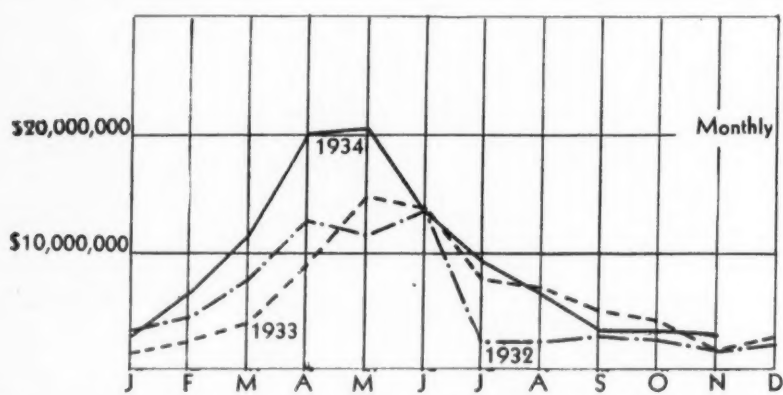


Fig. 2. Dollar value of Nema sales of household electric refrigerators, by months.

Average Refrigerator Price

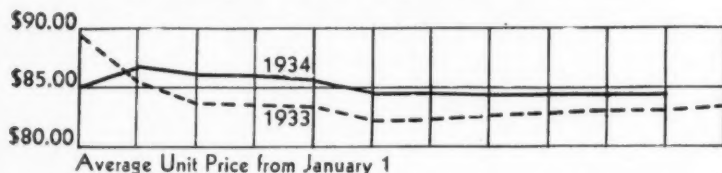


Fig. 3. Average unit price to distributors of household electric refrigerators, figured each month for all refrigerators sold to date in that year.

Household Unit Sales

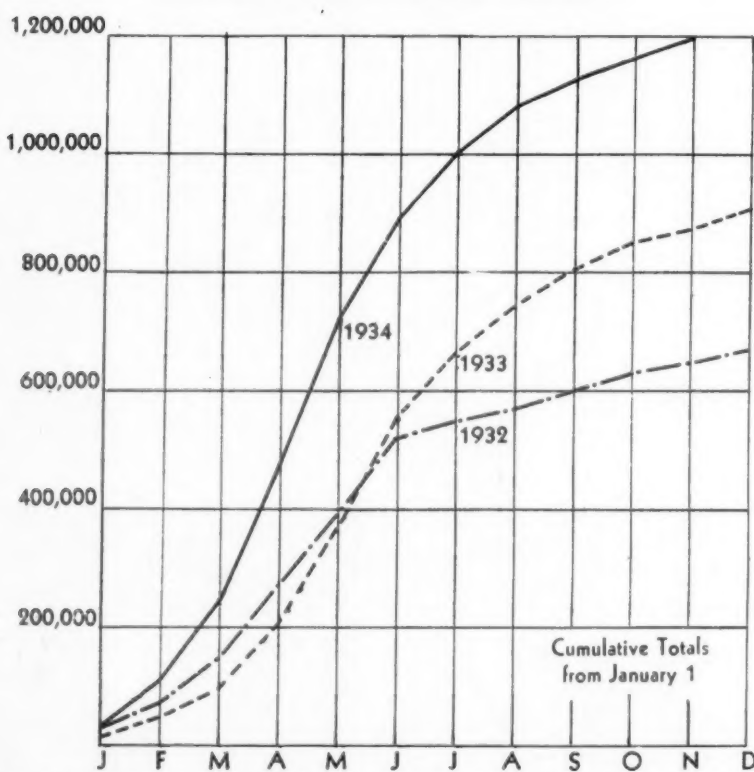


Fig. 4. Cumulative household unit sales by Nema companies to dealers and distributors, including exports.

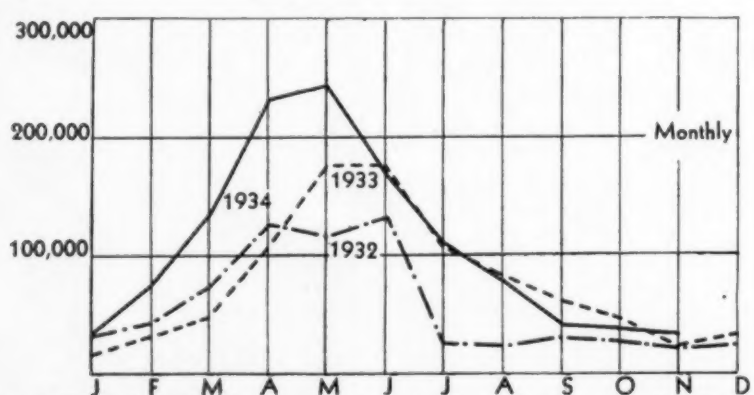


Fig. 5. Nema household unit sales by months to dealers and distributors, including exports.

Graphs Record Gain In Household and Commercial Sales

By John T. Schaefer

DETROIT—A graphic history of commercial and household electric refrigeration sales and stocks for the last three years, prepared by Haldean Finnie, consultant to the Refrigeration Division of the National Electrical Manufacturers Association, shows that commercial unit sales and dollar volume are well ahead of last year.

The figures represent sales by the following members of the association: Crosley Radio Corp., Frigidaire Corp., General Electric Co., Gibson Electric Refrigerator Corp., Kelvinator Corp., Leonard Refrigerator Co., Norge Corp., Servel, Inc., Stewart-Warner Corp., Sunbeam Electric Mfg. Co., Uniflow Mfg. Co., Universal Cooler Corp., and Westinghouse Electric & Mfg. Co.

Nema members whose figures are not included are Apex Electrical Mfg. Co., Jomoco, Inc., Merchant & Evans Co., and Sparks-Withington Co. Figures for the reporting companies do include, however, sales made by Major Appliance Corp., Montgomery Ward & Co., Potter Refrigerator Corp., Sears, Roebuck Co., and Trucon Steel Co.

Household Refrigeration

That the charts on household refrigeration, Figs. 1 through 8, indicate very closely the trends for the entire industry is evident from the fact that a figure of 88.6 per cent has been tentatively adopted by ELECTRIC REFRIGERATION NEWS, as the proportion of all household refrigeration business which was handled by Nema members in 1934 (see A. J. Cutting's summary of all-industry household refrigeration sales on page 1 of this issue).

Nema members do not account for such a large proportion of commercial refrigeration sales, however, since such important factors as Carrier, Frick, and York report their sales to another agency—the Refrigerating Machinery Association.

Field reports about these "big machine" manufacturers generally indicate that they enjoyed increased sales of commercial equipment in 1934, so their activities probably do not alter the upward trends expressed in the Nema charts, Figs. 9 through 15, on commercial refrigeration.

Mr. Finnie's charts as reproduced herewith are quite self-explanatory. It should be understood, in studying them, that the sales figures charted are always sales by Nema manufacturers to dealers and distributors in this country, plus exports.

Figs. 1, 4, 9, and 11 are cumulative charts in that each month the sales to date for that year were added up together to show the business which had been transacted to date that year.

Fig. 3 is also a cumulative chart in that it gives the average household unit price from a manufacturer to its dealers and distributors (with their discounts subtracted), figured on the basis of all sales from the beginning of each year.

"Dollar Value" Used in Commercial

While figures on unit sales of household refrigerators (Figs. 2, 4, and 5) are generally used in comparative studies of household refrigeration sales, Mr. Finnie logically inclines to the opinion that dollar value is the more significant basis of comparison in commercial refrigeration because of the wide variety in types of equipment included in the general classification "commercial refrigeration."

Accordingly his charts of all commercial refrigeration stocks are based on dollar value.

In the charts of unit sales (Figs. 4 and 5 for household refrigeration, and Figs. 11 and 12 for commercial), the measuring stick for household refrigerators is the number of low sides (evaporators) sold, while high sides (compressors) are used in commercial.

Figs. 2 and 5 show rather strikingly that 1934 spring sales got under way earlier than usual, and reached new peaks in April and May. This "spring buying wave" by dealers and distributors accounted in a large measure for the sales record made in 1934.

April and May household peaks are sales to distributors and dealers, of course, and anticipate by about 60 days the peaks of sales to consumers.

Fig. 9—dollar volume of commercial refrigeration sales—presents a much more encouraging picture of commercial refrigeration than was visible at this time last year. 1934 dollar volume on commercial was ahead of 1933 every month except October, as shown in Fig. 10, and December, 1934, sales (not yet reported) may bring commercial dollar volume for the year up to the total for 1932, see end of 1934 curve in Fig. 9.

Household Refrigerator Stocks

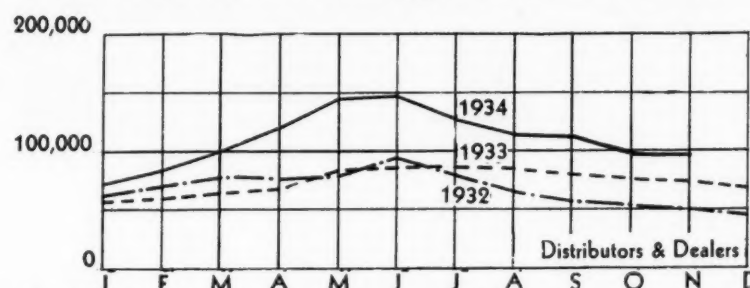


Fig. 6. Monthly variations in dealer and distributor household unit stocks.

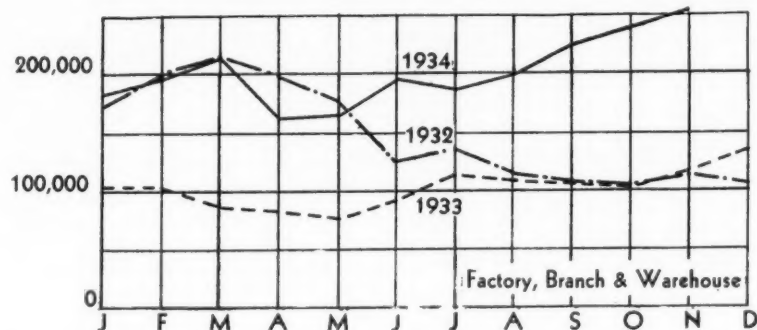


Fig. 7. Factory, branch, and warehouse household stocks, by months.

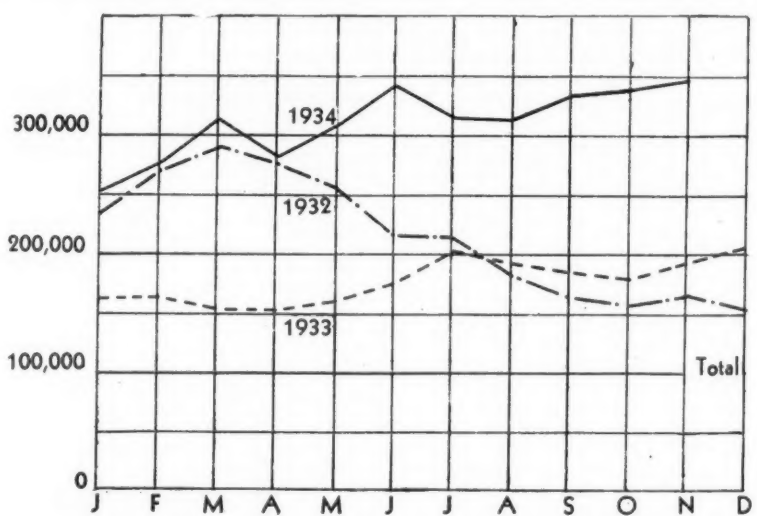


Fig. 8. Total of Nema dealer, distributor, factory, branch, and warehouse stocks of household refrigerators, by months.

Dollar Volume of Commercial Sales

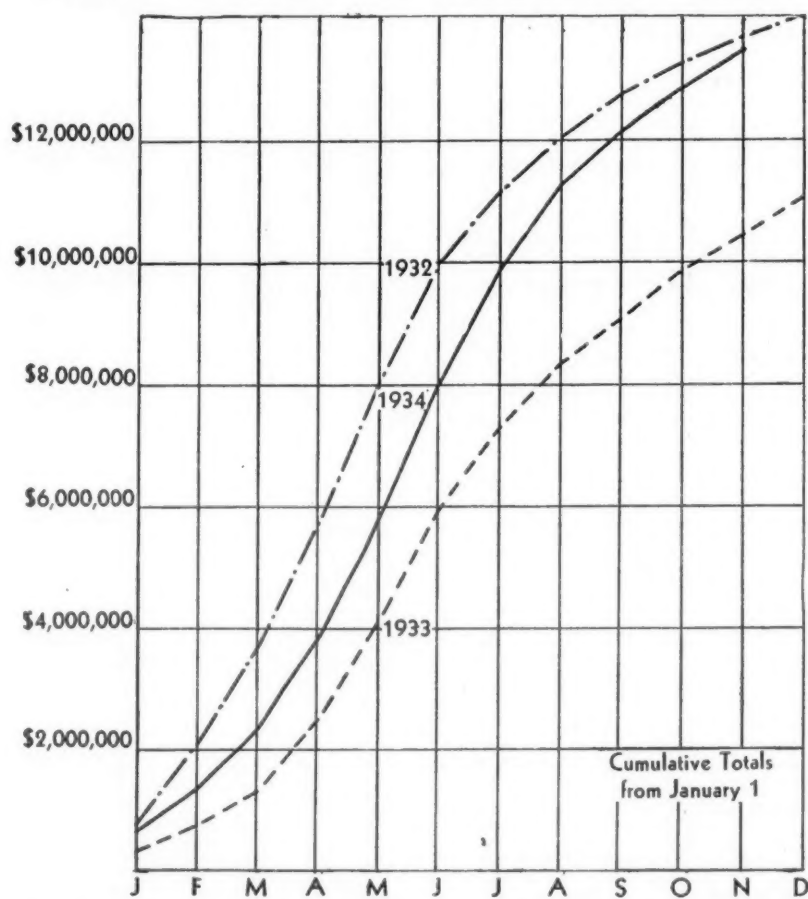


Fig. 9. Nema commercial dollar volume of sales to dealers and distributors, plus exports, charted cumulatively from the first of each year.

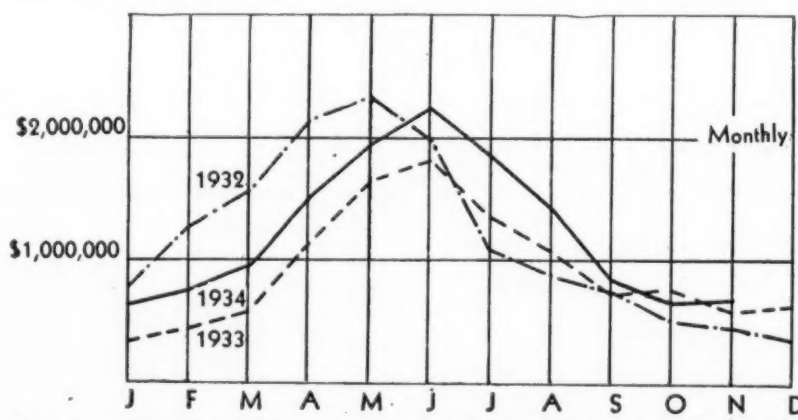


Fig. 10. Monthly dollar volume of Nema commercial refrigeration sales to dealers and distributors, including exports.

Commercial High Side Sales

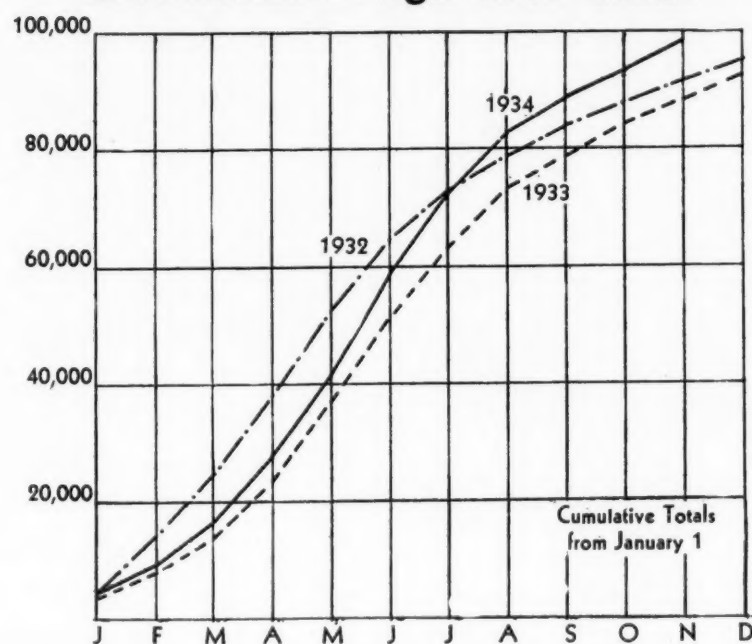


Fig. 11. Cumulative sales of commercial refrigerating units (high sides) to dealers and distributors, including exports.

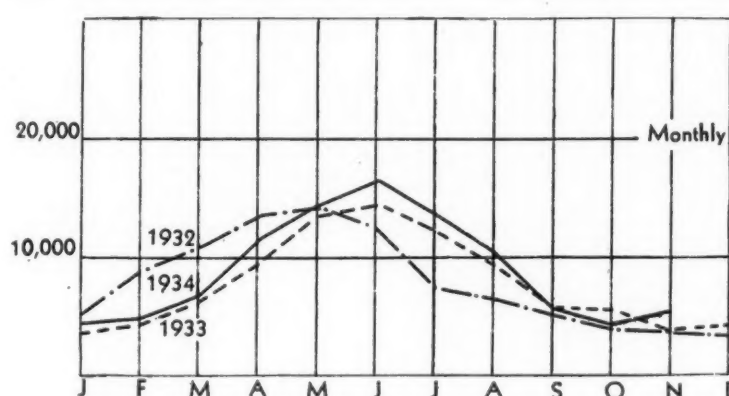


Fig. 12. Nema sales by months of commercial units (high sides).

Commercial Machine Stocks

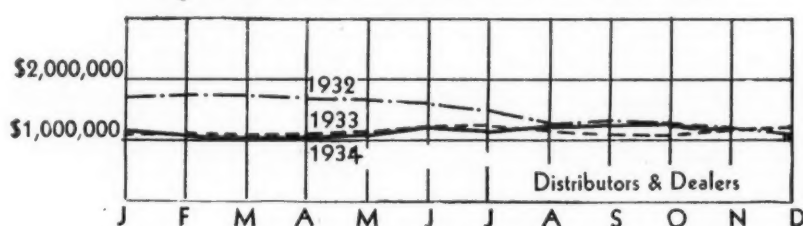


Fig. 13. Monthly variations in commercial stocks (dollar value) held by Nema dealers and distributors.

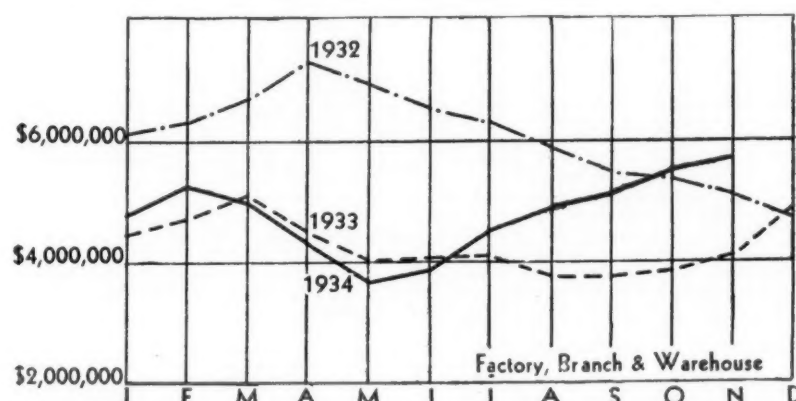


Fig. 14. Dollar value of factory, branch, and warehouse commercial stocks.

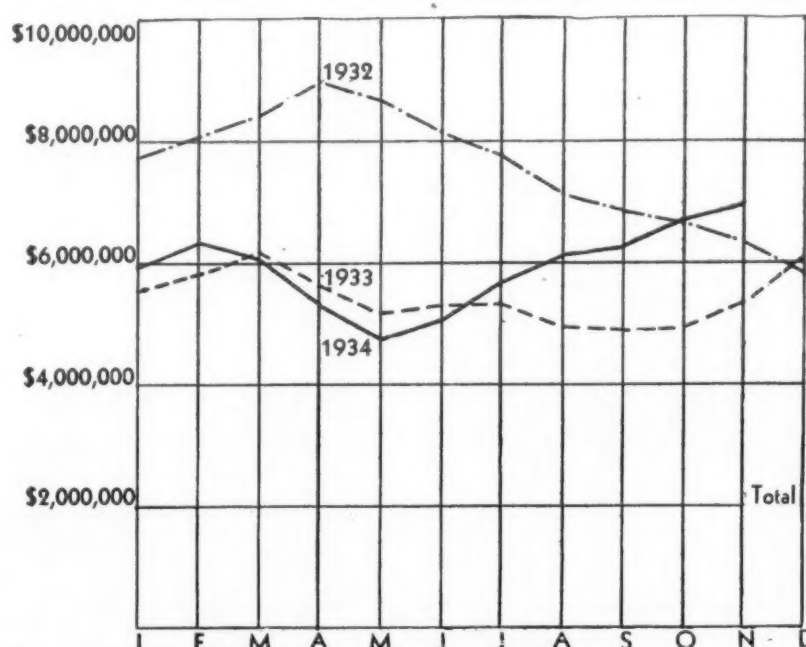


Fig. 15. Total dollar value by months of Nema dealer, distributor, factory, branch, and warehouse commercial refrigeration stocks.

Hermit Owned Only One Modern Appliance—A Refrigerator

JACKSBORO, Texas — Albert Schnocke, famed "Old Hermit" of this section of the country, who died recently at the age of 92 years, got

along without every modern convenience except one—a refrigerator. Old Albert didn't need a radio, stove, telephone, electric lights, or an automobile, and he got his drinking water from the creek and his food from the soil which he tilled himself. The one thing that Albert did stir from his hermitage to buy was a kerosene-operated Electrolux refrigerator.

1,400,000 Units Sold By Industry

(Concluded from Page 1, Column 5) production facilities of manufacturers from distributors and dealers with the result that more than 1,000,000 household electric refrigerators were shipped to distribution outlets during the first six months of the year. Manufacturers' sales in each of the first five months were greater by a wide margin than in corresponding months of any previous year in industry history. In July and again in August, sales fell to slightly below the figures reported for those months in 1933, and in September it seemed apparent that some one had pricked the sales bubble when sales for the month slumped to 34 per cent below September, 1933. The October figure was also uninspiring in comparison with 1933. However, substantial increases were reported for November and December of 1934 to bring the year's total to about the 1,400,000 mark.

Reporting Members of Nema

Member companies of the Refrigeration Division of the National Electrical Manufacturers Association (Nema) who reported sales figures made about 88.6 per cent of all industry sales during 1934 as compared with approximately 84 per cent in 1933. Thirteen manufacturers of household electric refrigerators reported sales for each month, being as follows:

Crosley Radio Corp., Frigidaire Corp., General Electric Co., Gibson Electric Refrigerator Co., Leonard Refrigerator Co., Kelvinator Corp., Norge Corp., Servel, Inc., Stewart-Warner Corp., Sunbeam Electric Mfg. Co., Uniflow Mfg. Co., Universal Cooler Corp., and Westinghouse Electric & Mfg. Co.

Trupar Mfg. Co. reported sales figures to Nema through May, but its membership was terminated after the company was purchased by the Dallas E. Winslow, Inc. interests. After submitting sales figures through June, Wurlitzer Mfg. Co. resigned from Nema membership.

Nema members whose figures were not included in the reports during 1934 were Apex Electrical Mfg. Co., Jomoco, Inc., Merchant & Evans Co., and Sparks-Withington Co. During the year reporting Nema companies manufactured units for Fairbanks-Morse Home Appliances, Inc., Montgomery Ward & Co., Major Appliance Corp., Potter Refrigerator Corp., Sears, Roebuck & Co., and Truscon Steel Co.

Other Factors Represent 11.4%

The all-industry total includes estimates for the non-reporting Nema companies and other industry manufacturers whose sales together represented about 11.4 per cent of the total figure.

Although the complete record of household electric refrigerator exports for the year as compiled by the Department of Commerce is not as yet available, ELECTRIC REFRIGERATION NEWS has estimated, on the basis of the ten-months total, that about 110,000 household units were shipped to foreign distributors and dealers by industry manufacturers. This figure is about 69 per cent higher than the approximately 65,000 units exported in 1933 and indicates about 2 per cent relative increase in foreign business over 1933.

1,290,000 Sold in U. S.

Deducting the 1934 exports from the total world sales, it is indicated that approximately 1,290,000 household electric refrigerators were sold to distributors and dealers in the United States alone during the year.

Average price of household electric refrigerators for 1934 has tentatively been estimated by the News at \$172 making total retail dollar value about \$240,800,000. This dollar figure represents a 30 per cent increase over 1933 when dollar volume of sales was estimated to be \$183,600,000, but is about 3 per cent below the all-time high established in 1931 which was estimated to be \$248,970,000.

The unit and dollar value sales figures estimated for 1934 are preliminary and may be subjected to revision at a later date.

Shown below is the record of annual sales of household electric refrigerators by U. S. manufacturers since 1920 as compiled by ELECTRIC REFRIGERATION NEWS.

TEMPRITE

Instantaneous Cooling

"The leading cooler for water, beer and other beverages"

Write for Catalog

Temprite Products Corporation

(Formerly Liquid Cooler Corporation)

1349 Milwaukee East :: Detroit

PATENTS

Issued Dec. 18, 1934

1,984,445. DEVICE FOR COOLING BOTTLES OR SIMILAR VESSELS. Jacques Bienenfeld, Paris, France. Application April 8, 1933. Serial No. 665,241. In France April 16, 1932. 3 Claims. (Cl. 62-76.)

1. A cooling device comprising a tub, a framework carried in said tub to centrally support a bottle to be cooled, said framework thereby forming an ice chamber between the sides of the tub and the support for the bottle, means for spacing said framework from the bottom of the tub, and a perforated bottom plate for the ice chamber, said framework being yieldable to conform closely to different size bottles.

1,984,581. APPARATUS FOR COOLING AND AERATING MILK. Linus Johan Reinhold, Hasselberg, Krappert, Sweden. Application June 8, 1934. Serial No. 729,695. In Sweden June 9, 1933. 3 Claims. (Cl. 257-74.)

1. An apparatus for cooling and aerating milk in standard milk cans, comprising a holder adapted to be applied on the top of the can and consisting of a ring lying within the edge of the mouth of the milk can, a surrounding annular guard plate, bent strips connecting said guard plate to said ring, crossed bars carried at the upper end of said guard plate, and a centrally arranged journal sleeve carried by said crossed bars, a rotary stirrer adapted to hang down freely within the milk in the can and consisting of a central tube journaled at its upper end in said journal sleeve on the holder and provided with a cooling water inlet, a pair of outer tubes disposed on opposite sides of the central tube and connected to the latter at the lower ends of the tubes, a cover plate lying above the mouth of the can and penetrated by the said tubes, and outwardly projecting extensions provided on the said outer tubes at the upper ends thereof above the said cover plate and having tangentially disposed outlet ends forming reaction turbine nozzles.

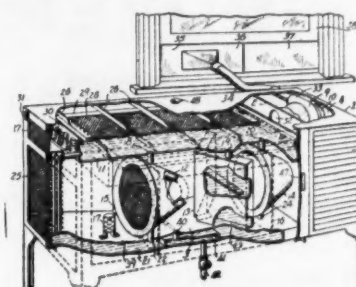
1,984,592. PRESSURE REGULATOR FOR GAS REFRIGERATOR PILOT LIGHTS. Allen D. MacLean, Pittsburgh, Pa., assignor to Pittsburgh Equitable Meter Co., Pittsburgh, Pa., a corporation of Pennsylvania. Application Dec. 6, 1930. Serial No. 500,636. 3 Claims. (Cl. 50-24.)

1. In combination with a sheet metal fluid pressure regulator casing having an apertured face, a machined steel block having a face designed for coaction with said casing face, a boss provided on said block and disposed in said coacting face, said block also being provided with suitable inlet and outlet ports and interconnecting ports extending through said boss, said block and casing being welded together in sealing relation with said boss extended through said casing aperture and with said coacting faces in contact, whereby said steel block will stiffen and maintain said casing against flexure or distortion.

1,984,605. AIR CONDITIONING DEVICE. John J. Strang and Emile P. Brus, Kansas City, Mo., assignors to Strang Air Conditioning Corp., Kansas City, Mo., a corporation of Missouri. Application March 23, 1932. Serial No. 600,697. 16 Claims. (Cl. 62-139.)

16. An air conditioning device comprising in combination, a housing, an upper liquid tank, a lower liquid tank, said tank being adapted to form an air passageway with said housing, a plurality of hollow heat exchange members extending between said tanks and positioned in

said passageway, the construction being such that liquid may flow between said tanks through said hollow members in



1,984,605

heat exchange relation with air in said air passageway, means for evaporating liquid in said upper tank and discharging the liquid vapor outside the air space being conditioned, and means for passing the air to be conditioned through said passageway.

1,984,612. FREEZER. Miles Raymond Westover and Frank Campbell, Alton, Ill.; said Campbell assignor to I. H. Streeper 3d, Alton, Ill. Application July 18, 1932. Serial No. 623,232. 1 Claim. (Cl. 62-83.)

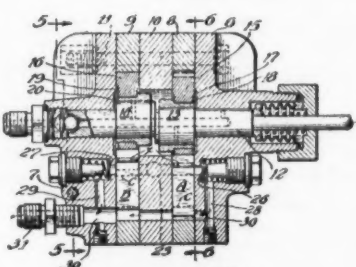
In a freezer for ice cream or the like, a container for receiving the material to be frozen, a hollow projection connected with the central portion of the upper face of the bottom of the container and a tubular member of the same cross-sectional area throughout and having both ends open with its lower end fitting over the projection and its upper end spaced slightly below the upper end of the container.

1,984,639. REFRIGERATOR CONTROL. James E. Grant and Reuben B. Davison, Chicago, Ill. Application Feb. 13, 1933. Serial No. 656,459. 1 Claim. (Cl. 62-4.)

The combination with a refrigerating device having an electric motor, an electric heater for oil, an evaporator and a thermostatically controlled switch for normally maintaining a temperature within the box at which frost will form on the evaporator, of means for periodically defrosting said evaporator, said means including clock mechanism, contacts for the power supply to said motor through said thermostat, and means for setting said clock mechanism to break said contacts at predetermined times, all without interrupting the supply of current to said oil heater.

1,984,658. AIR CONDITIONING MACHINE. Alfred E. Rourke, San Francisco, Calif., assignor of one-half to Walter G. Abbott, San Francisco, Calif. Application Dec. 24, 1932. Serial No. 648,810. 6 Claims. (Cl. 257-9.)

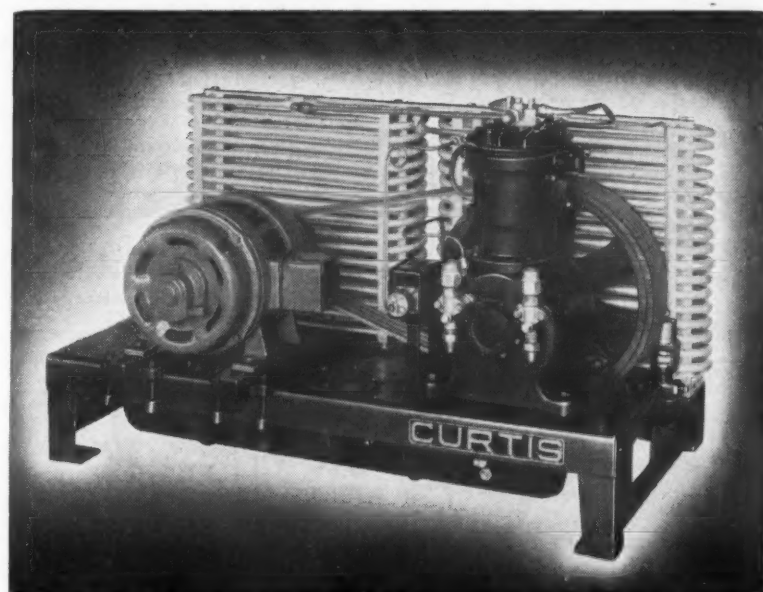
1. An air conditioner including an enclosing casing open at its front and closed at the rear; a tunnel mounted in said casing and spaced from the rear thereof; a blower mounted in the rear end of said tunnel; a humidifier; a baffle; and air tempering means in said tunnel in front of said blower.



1,984,664

1,984,664. SECTIONAL ROTARY COMPRESSOR. Alfred Teves, Frankfurt-on-

(Concluded on Page 14, Column 3)



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Units to fit every need

CURTIS, one of the oldest cooled—reflecting 80 years compressor manufacturers, engineering, designing and offers one of the most complete lines of refrigerating units—1/6th to 2 H. P. air cooled; 1/3rd to 15 H.P. water

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MARKING—Every model is stamped with factory code number and temperature settings. Lever and dial positions are plainly marked on the plate.

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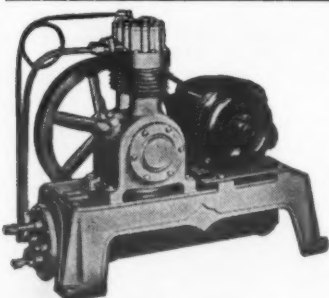
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With Water Cooled Head

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PATENTS

(Concluded from Page 13, Column 5)

the-Main, Germany. Application Dec. 23, 1931. Serial No. 582,816. In Germany Dec. 29, 1930. 5 Claims. (Cl. 230-158.)

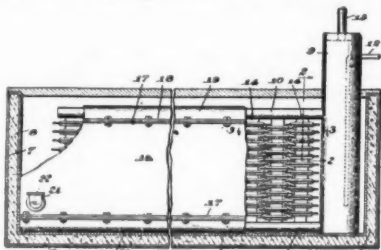
2. A rotary compressor comprising a pair of head sections, one or more dividing sections, a plurality of interchangeable chamber sections symmetrical and identical as to shape and size interposed between said head and dividing sections, at least one longitudinal conduit extending through said dividing and chamber sections, a shaft rotatably mounted in said head sections and passing through said dividing and chamber sections, piston members mounted on said shaft, one in each chamber section, and inlet and outlet connections in said head sections associated with said conduit or conduits.

1,984,724. MACHINE FOR MAKING FROZEN CONFECTIONS. Rudolph G. Birr, Lombard, Ill., assignor to Precision Metal Workers, Chicago, Ill., a corporation of Illinois. Application March 25, 1933. Serial No. 662,706. 13 Claims. (Cl. 107-8.)

13. In a machine for making frozen confections, a rotatable head having a plurality of operating faces, each of which is adapted to receive a plurality of sticks, plates slidably mounted on said head for movement parallel to the sticks, guide means on said plates through which the sticks extend, removable abutment means on each plate adapted to engage a mold, and resilient means for holding the sticks in cooperative relation with the head and guide means.

1,984,758. EVAPORATING DEVICE FOR REFRIGERATING SYSTEMS. William A. Owen, Johnson City, Tenn. Application Oct. 14, 1933. Serial No. 693,636. 5 Claims. (Cl. 62-141.)

1. An evaporating device comprising an upper and a lower header, a plurality of tubes connecting said headers, means for



1,984,758

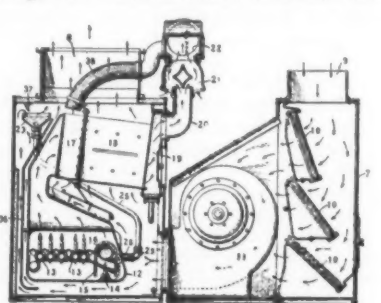
causing a flow of fluid in a direction transverse to the longitudinal axes of the tubes, each of said tubes having spaced apart portions of greater and less diameter, being formed to cleave the stream on oncoming liquid and for preventing cross currents in the rear of the tube, thereby providing for a uniform flow.

1,984,860. ICE CREAM UNIT FOR ELECTRIC REFRIGERATORS. Charles W. Brecht, Pittsburgh, Pa. Application Oct. 2, 1931. Serial No. 566,540. 1 Claim. (Cl. 259-110.)

The combination with an electric refrigerator having a freezing unit therein, said freezing unit having a compartment therein, of a removable container in said compartment, an agitator element removably mounted in said container, said agitator element having a shaft thereon, means on one end wall of said container for resiliently and rotatably supporting one end of said shaft, a shaft carried by the other end wall of the container, said shaft and agitator shaft being so arranged as to form a severable driving connection therebetween, a driving motor mounted in the refrigerator independent of said container, said motor having a drive shaft, and means for effecting a readily severable driving connection between the motor shaft and the shaft carried by the end wall of the container.

1,984,866. AIR HUMIDIFICATION APPARATUS. Vincent S. Day, Summit, N. J., assignor, by mesne assignments, to Carrier Engineering Corp., Newark, N. J., a corporation of New York. Application June 1, 1931. Serial No. 541,242. 7 Claims. (Cl. 126-113.)

1. In an air conditioning unit, a casing, a fire-box in said casing, a heat interchanger in communication with said fire-



1,984,866

box, a fan for supplying air to said casing, the surfaces of said firebox and said interchanger forming a passageway for the main portion of air supplied by said fan, air humidifying means, and a partition between said firebox and said casing, said partition forming a passageway with said casing for diverting a portion of the air supplied by said fan to said humidifying means, said partition forming a passageway with said firebox for diverting another portion of the air supplied by said fan over the surfaces of said firebox to cool it.

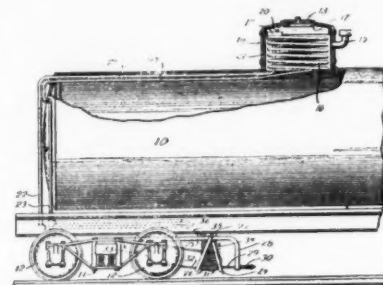
1,984,907. AIR-CONDITIONING FURNACE. Charles C. Wilson, Dayton, Ohio. Application Dec. 26, 1933. Serial No. 703,932. 7 Claims. (Cl. 126-116.)

1. A furnace of the type described, comprising an outer casing, an inner shell projecting from the top of the furnace to a point near its bottom, to conduct air downwardly there through, means in said shell for humidifying the descending air, heating units surrounding the inner shell and spaced a sufficient distance therefrom to form a passage to receive the air which descends through said shell, transverse air passages in said heating units, communicating with the air pas-

sage between said units and the inner shell, a passage between the heating units and the outer wall of the casing to receive the air which passes through the transverse passages of the heating units, and an air outlet in the outer casing, in communication with the upper part of the last named passage.

1,984,912. REFRIGERATING CAR. Thomas A. Banning, Jr., Wilmette, Ill., assignor to Pullman Car & Mfg. Corp., Chicago, Ill., a corporation of Delaware. Application Dec. 15, 1930. Serial No. 502,486. 23 Claims. (Cl. 62-117.)

1. The combination with a car having a body and trucks, provided with the usual axles and wheels, of means for re-



1,984,912

frigerating the car body comprising a pumping unit, a cooling coil, and a receptacle for storage of compressed liquefied gas mounted rigidly on the car body, an expansion valve and cooling unit also mounted on the car body in position to refrigerate a selected portion of said body, connections between the pumping unit, the cooling coil and the receptacle for delivery of compressed and cooled gas into the receptacle, connections between the receptacle the expansion valve and cooling unit, and the return side of the pumping unit for delivery of compressed gas from the receptacle to the expansion valve and cooling unit, and from the expansion valve and cooling unit back to the inlet side of the pumping unit for return of expanded gas back to the pumping unit for recompression thereby, and means for driving the pumping unit directly from a truck axle, whereby the driving of said pumping unit is concurrent with the travel of the car so that the pumping ability is determined by car travel, and the receptacle for compressed and cooled gas being of capacity to supply such compressed and cooled gas to the expansion valve and cooling unit according to the needs of said parts and irrespective of periods of travel and rest of the car in normal service, substantially as described.

1,984,977. REFRIGERATOR. Earl W. Mize, Jacksonville, Fla., assignor of one-fourth to Robert W. Forbes, one-fourth to Joseph A. Fitzsimmons, and one-fourth to Joseph M. Bryant, all of Jacksonville, Fla. Application June 26, 1934. Serial No. 732,521. 6 Claims. (Cl. 62-89.)

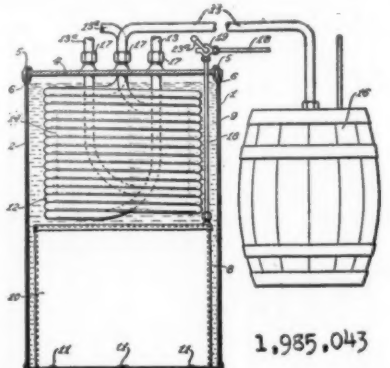
1. In a refrigerator having an interior refrigerating space, a main door for the refrigerator having an auxiliary refrigerating compartment therein with a rear insulating wall having perforations therein establishing communication between the compartment and the interior refrigerating space, and a secondary door for opening and closing said compartment independently of the opening or closing movement of said main door.

1,985,009. HEATING AND COOLING SYSTEM. Irving T. Bennett, Rome, and Frank C. Reynolds, New York, N. Y., assignors, by mesne assignments, to Metropolitan Engineering Co., a corporation of New York. Original application May 17, 1929. Serial No. 363,873. Divided and this application Nov. 21, 1932. Serial No. 643,705. 5 Claims. (Cl. 257-9.)

5. Apparatus of the type described which comprises an air passageway, heating elements for the supply or abstraction of heat, said elements being mounted at different levels and having extended surfaces for the transmission of heat and condensation of moisture, said surfaces being spaced throughout the cross-sectional area of said passageway and positioned to form passages, without change in direction transversely through said heating elements, and means for supplying heating medium to the upper ends of said heating elements or alternatively supplying cooling medium to the lower ends thereof.

1,985,043. COOLER. Francis L. Leporte, St. Louis, Mo. Application April 24, 1933. Serial No. 667,587. 7 Claims. (Cl. 225-40.)

1. A cooler comprising a cooling tank for a conductive fluid, a cooling coil arranged in said tank to cool said fluid, an



1,985,043

auxiliary fluid receptacle communicating with said tank and positioned and adapted whereby fluid from said tank may flow therefrom into said receptacle when said tank and said coil are to be cleaned, and means for forcing said fluid into said tank from said receptacle.

1,985,050. AIR CONDITIONING SYSTEM. Andre Merle, New York, N. Y., assignor of one-half to Ernest Williams, Scarsdale, N. Y. Application May 25, 1933. Serial No. 671,189. 12 Claims. (Cl. 257-8.)

1. In an air conditioning system, the combination of air supply and return ducts connected with the space to be ventilated and air conditioning means

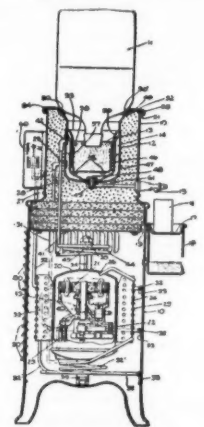
connecting said return and supply flues and including a fresh air intake to supply fresh air for admixture with re-used air from the return flue, a dehumidifier through which is passed part of the air for the supply duct, a shunt for the remainder of the air passed to the supply duct, a thermostat in the supply duct, means controlled by the supply duct thermostat for varying the relative proportion of air passing through the dehumidifier and the shunt respectively and a thermostat in the return duct for varying the setting of the thermostat in the supply duct.

1,985,052. AIR COOLER AND CIRCULATOR. Arthur B. Modine, Racine, Wis., assignor to Modine Mfg. Co., Racine, Wis., a corporation of Wisconsin. Application June 25, 1932. Serial No. 619,221. 9 Claims. (Cl. 62-133.)

1. In a device of the kind described, a base comprising a pan having bottom and vertical side walls, supporting members therein, a receptacle for containing a cooling medium, said receptacle being of lesser horizontal dimension than said pan and adapted to cooperate with said supporting members to maintain said receptacle in spaced relation above and inwardly with respect to the walls of said base, said receptacle having an opening in its bottom, a tubular member within said receptacle and contacting the cooling medium therein, said tubular member having one end connected to said opening and terminating at its opposite end near the top of said receptacle, a closure at the top of said receptacle having a passage therethrough, and means for maintaining a current of air through the several members of said device successively.

1,985,064. WATER COOLER. Christian Steenstrup, Schenectady, N. Y., assignor to General Electric Co., a corporation of New York. Application April 16, 1929. Serial No. 355,551. Renewed July 11, 1934. 22 Claims. (Cl. 62-141.)

1. A refrigerating system, including a water cooling unit comprising two receptacles arranged one within the other



1,985,064

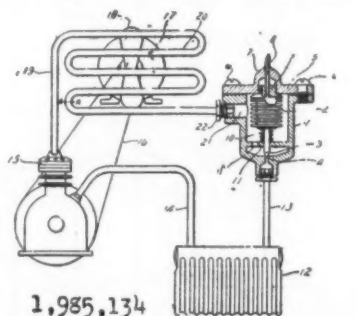
and spaced apart to form a closed evaporator chamber, the bottoms of said receptacles having flattened faces in contact with each other and having a cold water outlet secured therein, means for supplying water to said inner receptacle, and means for withdrawing cold water from said receptacle through said outlet.

1,985,065. REFRIGERATING SYSTEM. Christian Steenstrup, Schenectady, N. Y., assignor to General Electric Co., a corporation of New York. Original application April 16, 1929. Serial No. 355,551. Divided and this application Aug. 3, 1931. Serial No. 554,623. 13 Claims. (Cl. 62-115.)

1. A refrigerating system including a cabinet, a compressor arranged in said cabinet and having a condenser coil arranged about said compressor and spaced therefrom, and another condenser coil in heat conducting relation with the wall of said cabinet so as to provide for the conduction of heat from said condenser to the wall of said cabinet for cooling said condenser.

1,985,134. LIQUID TRAP FOR REFRIGERATING SYSTEMS. Clarence B. Yount, Dayton, Ohio. Application April 10, 1933. Serial No. 665,286. 1 Claim. (Cl. 62-3.)

A pressure valve for a refrigerating system including an evaporator, a compressor and a condenser, comprising a



1,985,134

valve body formed with a refrigerant inlet port, bellows in said valve body to receive a liquid of different volatility than the refrigerant, a needle valve member projecting downwardly from said bellows, a seat in said valve body against which said needle valve member is adapted to be pressed by the expansion of the liquid within the bellows, a partition in the valve body between the bellows and the seat and formed with holes through which the needle valve member and the refrigerant passes, and a helical spring on the needle valve member between the bellows and the partition, for the purpose specified.

1,985,138. REFRIGERATING APPARATUS. Len A. Banta, Clearfield, Pa., Application July 30, 1929. Serial No. 392,092. 8 Claims. (Cl. 62-99.)

1. In a refrigerating chamber, the combination of refrigerating coils and an insulated metallic member disposed in close proximity to the refrigerating coils to be cooled thereby for causing a condensation of the moisture in the air in its passage into contact with said member.

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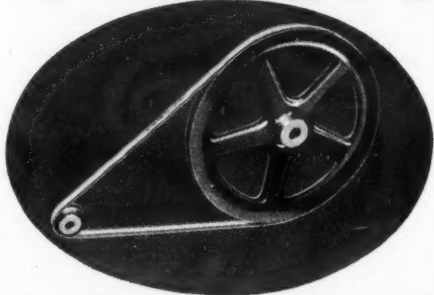
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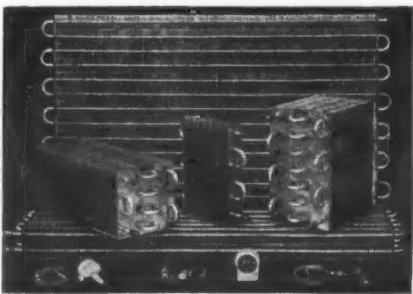
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5 or more each	2.75	4.50	6.50
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1-2-35

QUESTIONS**Refrigeration 'Blue Book'**

No. 2007 (Insurance company, New York)—"Would you be kind enough to advise me as to the name of the publisher of a 'Blue Book' relative to the names, maker, models, year and second hand market values of electric refrigerators; and also if possible advise me as to the charge for said 'Blue Book'."

Answer: To the best of our knowledge no book of the kind described has been published.

Power Takeoff Design

No. 2008 (Engineer, Massachusetts)—"Is there such a thing as a power takeoff from the flywheel with a speed control, that is one that will run a compressor at a predetermined speed regardless of engine speed with a vacuum controlled clutch that will cut out the compressor at the desired temperature?"

"If there is not how would I go about getting one patented? Would I have to make one first? If so, how would I protect it while in the experimental stage?"

"I know this is a lot of questions, but who would I ask if not you? As I see it this is the coming thing for small meat trucks for around the city and I think I have it all figured out so the compressor will maintain the same speed if the truck engine is idling or traveling at 50 miles an hour."

Answer: There are a number of power take-off devices now on the market which have been designed specifically for driving compressors on refrigerated trucks. So far as we know, none of these use a vacuum controlled clutch such as you have in mind for cutting out the compressor when the required refrigeration temperature is produced.

Manufacturers of power take-offs now on the market include:
Century Electric Co., 1806 Pine St., St. Louis Mo.
General Electric Co., Schenectady, N. Y.

Kohler Co., Kohler, Wis.
Louis Allis Co., Milwaukee, Wis.

Three of these drives have been described in past issues of ELECTRIC REFRIGERATION NEWS or REFRIGERATED FOOD NEWS, as follows:

The Century "Whitaker-Upp" system in the August, 1933 issue of REFRIGERATED FOOD NEWS; The General Electric system in the Nov. 14, 1934 ELECTRIC REFRIGERATION NEWS; and the Louis Allis system in the Sept. 19, 1934 issue of ELECTRIC REFRIGERATION NEWS.

With respect to patents, the U. S. Patent Office no longer requires that a model be submitted for a patent to be granted. To protect your idea during the experimental stage it is a good idea to have somebody witness or notarize a drawing (with the date) to show that you had conceived the idea at that time.

Finance Charge Chart

No. 2009 (Manufacturer, Wisconsin)—"In an issue of ELECTRIC REFRIGERATION NEWS several months ago we recall seeing a tabulation of finance charges which, as we recall it, was to be used or had been adopted by the Nema group of refrigerator manufacturers in selling their products on conditional sales contracts."

"We will appreciate it very much if you can tell us which issue of ELECTRIC REFRIGERATION NEWS this tabulation appeared in."

Answer: No such "official" table of finance charges has ever been adopted by the Refrigeration Division of National Electrical Manufacturers Association (Nema).

The tabulation to which you refer is probably the one which is part of the NRA code for commercial refrigerator manufacturers, (display cases, butcher coolers, etc.) which was published on page 17 of the Aug. 8 issue of ELECTRIC REFRIGERATION NEWS.

Ice Cream Equipment

No. 2010 (Manufacturer, Holland)—"We intend to enter the ice cream equipment business and have under consideration to apply for the agency of some first class manufacturer not now represented in our country."

"We shall appreciate receiving the names and addresses of several manufacturers of such equipment and also of ice cream packing machines."

Answer: Manufacturers of ice cream cabinets are listed starting on page 222 of the 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK. Manufacturers of ice cream freezers are listed starting on page 224 of the DIRECTORY.

For manufacturers of other machinery used in ice cream making and packaging, write the Dairy and Ice Cream Machinery and Supplies Association, Inc., 232 Madison Ave., New York City, which will furnish you

with names of manufacturers of such equipment.

Makers of Gaskets

No. 2011 (Manufacturer, New York)—"We are very much interested to learn of some manufacturing company from whom we could secure gaskets for the various makes of refrigerators such as Kelvinator, Frigidaire, Copeland and other popular makes of electric machines."

Answer: We are not quite sure just what kind of gaskets you mean.

Manufacturers of gaskets for cabinet doors are listed on page 170 of the 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK. Manufacturers of gaskets for refrigeration compressors are listed on page 184 of the DIRECTORY.

The 1935 REFRIGERATION DIRECTORY AND MARKET DATA BOOK, which will be out in February, will bring these lists up to date.

**Industrial Applications
Of Air Conditioning**

No. 2012 (Advertising agency, New York)—"Can you refer me to or, better yet, send me clippings which you may have published with reference to the application of air conditioning in different industries?"

Answer: A very complete summary of how air conditioning is employed in various industries was published on pages 6 and 7 of the June 6, 1934 issue of ELECTRIC REFRIGERATION NEWS. The summary was taken from a study made by the Edison Electric Institute.

References to other articles which describe various types of air conditioning applications as published in issues of ELECTRIC REFRIGERATION NEWS during 1934 are as follows:

Tribune Tower air conditioned, page 1, Jan. 10 issue.

Four crack trains of Southern Pacific lines air conditioned, page 7, Feb. 28 issue.

New type train air conditioned, page 1, May 2 issue.

Survey of types of installations made by Westinghouse in 1933, page 17, May 2 issue.

Vault air conditioned, page 21, May 2 issue.

Summary of recent Carrier industrial and commercial installations, page 21, May 2 issue.

Shoe store air conditioned, page 23, May 2 issue.

Apparel shop and department store air conditioned, page 6, June 27 issue.

New York City bank air conditioned, page 16, July 4 issue.

Gold mine air conditioned, page 1, July 25 issue.

Apartment house air conditioned, page 1, July 25 issue.

Hotel air conditioned, page 6, July 25 issue.

Confectionery store air conditioned, page 7, July 25 issue.

Kresge stores air conditioned, page 10, Aug. 29 issue.

Research laboratory air conditioned, page 17, Sept. 5 issue.

Oil firm's laboratory air conditioned, page 17, Sept. 5 issue.

New Pullman cars air conditioned, page 4, Sept. 26 issue.

Sports apparel shop air conditioned, page 4, Sept. 26 issue.

Detroit store installs year 'round system, page 8, Sept. 26 issue.

Detroit fur shop air conditioned, page 6, Oct. 10 issue.

Girls school installs air conditioning, page 6, Oct. 24 issue.

Hershey plant air conditioned, page 9, Nov. 14 issue.

Radio station air conditioned, page 1, Nov. 28 issue.

Philadelphia theater installs system, page 9, Nov. 28 issue.

Food store air conditioned, page 11, Dec. 12 issue.

If you do not have copies of these issues of ELECTRIC REFRIGERATION NEWS in your file, they may be secured at a cost of 10 cents each by addressing Business News Publishing Co., 5229 Cass Ave., Detroit, Mich.

**INFORMATION
WANTED****'Post Hole Ice Cream Unit'**

We would appreciate receiving any available information concerning the "Post Hole Ice Cream Maker."

'Nordic' Refrigerator

Does anyone know the name of the company which manufactured a refrigerator unit bearing the trade name 'Nordic'?

Community Service

Does anyone have information concerning the Community Service Corp. of Detroit, a company which manufactured commercial refrigerating machines under the trade name "Universal" in 1928 or 1929. Corporate history and final disposition of patents and assets will be appreciated.

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REPLIES to advertisements with Box No. should be addressed to Electric Refrigeration News, 5229 Cass Ave., Detroit, Mich.

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SALES MANAGER, experienced in sales promotion, organizing sales crews, conducting sales training schools, developing sales campaigns, appointing distributors and dealers. Can furnish successful electric refrigerator sales records and several large western distributors and dealers for references. Desire western territory representing factory direct or large distributor. Box 663, Electric Refrigeration News.

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FOR SALE: 1 Frigidaire Compressor No. 69207-C complete with 1½ H. P. 3 phase 220 volt Delco motor in fine condition—\$110.00. 2 tray Frigidaire Boilers—\$4.00 each. 3-way shut off valves, used, 50c each. This merchandise is sold F.O.B. Chicago. Commodore Electric Company, 521 North Wells Street, Chicago.

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Absorption Machine

Back in 1927, the Master Domestic Refrigerating Co., Inc., Flushing, N. Y. was reported producing an absorption-type machine. President of the company was said to be A. H. Strong. Does any one have record of this company's activities?

Smith Ice Machine

In 1933 the Smith Ice Machine Co. of New York City was reported out of business. Information concerning disposition of patents and other assets is requested.

'Superior' Unit

Request has been made for a source of supply for service parts for the "Superior" refrigerating unit.

Frigaire Co.

According to information in our files, the Frigaire Co. of Pasadena, Calif., manufactured household units and also commercial machines for ice cream cabinets, soda fountains and water coolers in 1927. W. F. Warner was reported to be president of the company. Does any one have information covering the history or activities of this company?

Information on the above subjects will be appreciated by the editors of ELECTRIC REFRIGERATION NEWS, 5229 Cass Ave., Detroit, Mich.